A STUDY OF CUSTOMERS' RISK PERCEPTION OF ELECTRONIC PAYMENT METHOD IN HONG KONG

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ABSTRACT

Chapter one reviews the development of electronic fund transfer at point of sale (EFTPOS) in Hong Kong. Although EFTPOS provides many benefits to both consumers and retailers, the adoption rate remains low. Most of the related earlier studies on electronic banking services were focused on the profiles of adopters of the services. Few studies are done on the consumers' risk perception of the close alternatives to EFTPOS services, cash, and how consumers view EFTPOS differently from cash.

Chapter two reviews the related literatures in the area of electronic fund transfer system (EFTS) and the perceived risk model to explain the adoption of a particular product or service. The basic finding is that the low adoption of EFTPOS service is due to consumers' resistance. Present users of the service are early adopters of EFTPOS who are described as young, educated and high income people. The four hypotheses to be tested are also developed. The hypotheses are used to test (1) the different in the level of perceived risk among the three alternative methods of payment, i.e. cash, credit card and EFTPOS; (2) the difference in the level of perceived risk between small and large purchase situation; (3) the difference in the level of perceived risk between EFTPOS users and non-users; and (4) the difference in the level of perceived risk between more knowledgable users and less knowledgable users of EFTPOS service.

Chapter three reviews the five basic dimensions of perceived risk to be tested in this study in more detail. They are financial risk, physical risk, performance risk, psychological risk and time loss risk. The design of questionnaire is explained and the operation procedure of the survey is described. The methodology used to test the hypotheses, including paired and grouped t-test and chi-square test, are also discussed.

The results of the survey are summarized in Chapter four and the four hypotheses are tested accordingly. The implication and explanation of the test results are also given. The major findings are (1) different methods of payment have different levels of perceived risk for the five dimensions of risk; (2) the purchase amount has very small effect on the level of perceived risk except cash payment which is dominated by physical risk; (3) there is little difference in the level of risk perception between EFTPOS users and non-users; and (4) the knowledge on EFTPOS service does not affect the level of perceived risk.

Chapter five concludes the whole study on perceived risk of EFTPOS service. The basic finding is that EFTPOS is only an alternative to credit card but not an alternative to cash payment. The economic incentive to use EFTPOS is low when compare to credit card. The low acceptance by retailers of EFTPOS is its major weakness when compares to cash payment. The possible further study is the test of the effects of risk reduction techniques on the level of perceived risk for EFTPOS users.

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CHAPTER I

INTRODUCTION

This chapter provides an overview of alternative methods of payment. The development of electronic banking services as an innovative payment method is examined. The problems and the motivation to study are stated.

Definition of the Problem

While other Western countries are still experimenting with a national-wide Electronic Payment at Point-of-Sale (EFTPOS) system, Hong Kong is the first city to introduce a full-scale EFTPOS system (known as Easy Pay System or EPS in short) in the retail outlets. However, this does not guarantee that EFTPOS can follow the same successful story of the Automatic Teller Machine (ATM) in the territory.[1] The EFTPOS service is offered as an alternative to other conventional payment methods, such as cash, cheque and credit card. The primary questions of interests in this study are:

1) **Do consumers perceive different level of risk for alternative payment methods?**

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[1] "EPS suffers a loss of ten millions." Oriental Daily, 4/4/1988, p.5.

2) How do consumers perceive EFTPOS differently from other conventional payment methods?

Overview of Payment System

Modern society relies on the exchange of goods and services to support its growth. With the exception of barter trades, all exchanges of goods involve some media of payment, either notes and currency or some written instructions requesting transfer of fund between two parties. Cash, a printed paper as the legal medium of exchange, remains as primary medium of exchange for small payment. Cheque is another major form of payment due to its convenience. Cheque, no matter written in any amount, can easily be carried and transferred to other parties and its risk of loss is lower than cash. Credit card payment, by which the cardholders temporarily borrow money from the card issuers, has received increasing popularity. However, all the above three payment methods involve some form of manual processing which are highly costly. Electronic Fund Transfer System (known as EFTS) has been introduced as a replacement for paper transactions and can be defined as:[2]

> *"A computer-based network that enables payment system transactions to be initiated, approved, executed, and recorded with electronic impulses and machine-sensible data rather than with paper."*

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[2] American Institute of Certified Public Accountants. Audit Considerations in Electronic Funds Transfer Systems. New York, AICPA, 1978. For a more detail review of the development of EFTS in Hong Kong, please refer to Ho, S.S.M. "Information Technology in Banking and Finance." The Hong Kong Financial System. (ed. Ho, Richard & Scott, Robert & Wong, K.A.), Oxford, 1991, pp. 305-337.

In general, EFTS is a generic term used for various computer-based technologies which deliver electronic banking services to the consumers.

Overview of Innovations in Electronic Banking Technology

Recent changes in the electronic banking technology have produced much assortment and convenient services for consumers. At present, the innovative technology which has been put into practical use includes[3]:

(1) Home Banking

Individual customers have access to their own bank accounts and can transfer funds or make payments at home by the use of television sets or personal computers as terminals and telephone lines as communication link.

(2) Office Banking

Similarly, corporate clients can gain access to various new banking services, such as financial management services, payment and reporting services within their offices. They can use computers and data communication technology to connect directly with their banks' computer network. Electronic letter of credit and cash management system can also be integrated into this package of office banking services.

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3 Moutinhom, Luiz and Meidan, Arthur. "Bank Customers' Perceptions, Innovations and New Technology." International Journal of Bank Marketing. Vol. 7 No. 2, 1989, pp. 22-27.

(3) Electronic Letter of Credit and Cash Management System

Corporate customers can open or amend a letter of credit in their office and transmit it to the bank electronically. International corporations can transmit instructions about accounts and fund transfer by electronic means globally. By doing so, corporations can lower their borrowing costs and maximize their returns on surplus cash. Also, they can hedge against interest rate or foreign exchange fluctuations.

(4) Self-service Banking

Innovative bank offices can have a whole range of fully-automated devices which can provide different banking services to customers in a self-service mode. No human teller is needed to serve the customers.

(5) Automatic Teller Machine (ATM) and Cash Dispensers (CD)

Individual customers can have 365-day and 24-hour access to their cash deposits in the banks and pre-authorized credit line by the use of ATM and CD.

(6) Electronic Fund Transfer at Point-of-Sale (EFTPOS)

It is a cashless and chequeless payment method at the point of sale. Its operation requires a debit card, a Personal Identification Number (PIN) and a Point-of-Sale (POS) terminal at the retail outlet. The consumers' bank accounts are debited for the purchased amounts and simultaneously the retailers' bank accounts are credited the same amounts.

(7) Smart Card

It is a memory card with a traditional magnetic strip and a micro-processor inside. It contains all the credit information of the card holder. It operates in an off-line transaction mode which is just the opposite of on-line operation of EFTPOS transactions.

The Growth of Electronic Banking in Hong Kong

The rapid adoption of ATM services by Hong Kong people provides evidence that the Hong Kong consumers can easily accept new electronic banking services. The number of ATM installation has grown rapidly in the past decade. There are over 1,200 ATM in operation[4]. The outstanding number of various plastic cards issued was estimated to be over 3.5 million[5], including 1.7 million credit cards[6]. The introduction of another new but similar electronic banking services, such as EFTPOS, seems to be a natural extension of the ATM development.

Development of EFTPOS in Hong Kong

The EFTPOS is used by the banking institutions as a competitive tool by providing customers with better and more efficient services. The EFTPOS system in Hong Kong, commonly known as Electronic Payment Services (EPS), was

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4 "Services of ATM" Ming Pao, 1 January, 1989, p. 39.

5 "Lucky Draws for ATM users." Hong Kong Economic Times, 5 January 1989, p. 5.

6 Vaughan L.J. "Credit Cards Push Plastic Prestige." The Hong Kong Manager, July/August 1988, pp. 1-2.

introduced in Hong Kong in 1985. The EPS system was developed by the Hong Kong Association of Banks in conjunction with the Hongkong Bank. A group of 29 major local and foreign banks issuing ATM cards joined the development and started the Electronic Payment Service Co. (EPSCO). Initially, a total of 300 EPS terminals were installed in 113 retail outlets.[7] The EPS system is a shared network of POS terminals at retail outlets, by which all local ATM cardholders can use the services free of charge.

EPS is the only single EFTPOS system shared by all the major banks in Hong Kong. Although the EPS system is well supported by major banks and has quite a number of installation of terminals in retail outlets in Hong Kong, the adoption of EFTPOS by consumers as a substitution for cash payment is relatively low. Only less than 1% of potential EFTPOS users (i.e. ATM cardholders) use the service regularly. By the end of 1987, the total number of terminals and participating retail institutions exceeded 1,500 and 1,000 respectively. However, the EPSCO suffered a loss of over HK$10 million in the same year.[8]

Parties Involved in EFTPOS

There are basically four parties involved in every single transaction by EFTPOS transfer. They are consumers, merchants, banking institutions and EFTPOS switching centre established by EPSCO. Their relationship is showed in the following

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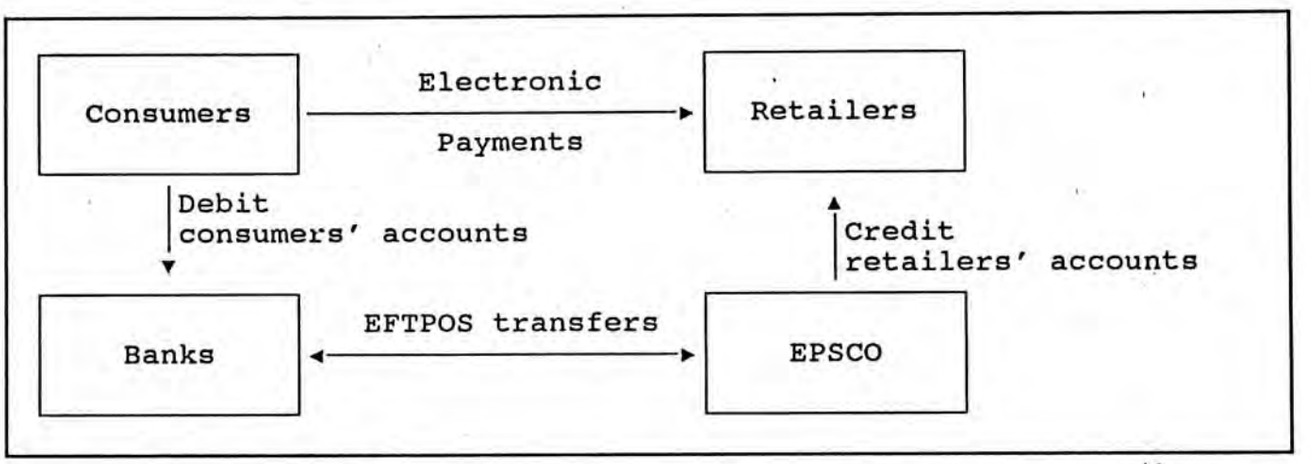
7 "Electronic Banking." The Executive, June 1985, pp. 24-27.

8 "EPS suffers a loss of ten millions." Oriental Daily, 4 April, 1988, p. 5.

Figure 1.1:

Figure 1.1 Parties Involved in EFTPOS Transactions



Benefits of EFTPOS

The EPS system promotes paperless transactions in which the consumers can transfer their payments directly from their bank accounts to the merchants' bank accounts in order to pay for purchase of goods or services. Any account holder with a debit card or ATM card or even some types of credit cards can use the EFTPOS services with no extra cost.

By using EPS transfer, consumers can have the following benefits when compared to cash payment:

(1) Convenience - no need to carry large amounts of cash;

(2) Flexibility - as an alternative method of payment to meet the consumers' needs;

(3) Speed - easy to operate and no need to verify signature;

(4) Security - low risk in over-spending because EFTPOS will only debit the bank saving instead of borrowing on credit.

From retailers' point of view, they can have the following benefits after installing the EPS system:

(1) Faster check out - shorter operation time and customer waiting time;

(2) Simplicity - handling of cheques and credit cards will involve manual verification of signatures;

(3) Less paper work - reducing number of cheques and credit card slips;

(4) Reduce security problem - displacement of cash will reduce physical and security problems related to cash handling;

(5) Guaranteed funds - automatically authorized payments;

(6) Cost reduction - reduction in cheque float and bad debt losses from bad cheques.

Problems for EFTPOS Development

The major issue facing the EPS development is the low volume of transaction. The volume of transactions of EPS in Hong Kong is not high enough to justify the installation and operation costs of the computer- and communications-based retail terminals. The low volume is mainly due to the competition from other payment alternatives, such as cash and credit card. There is little economic incentive to use EPS since the service will eliminate the benefits of floats offered by credit card. Cash is also perceived to be more convenient and welcomed in all situations.

Personal privacy is another issue facing the consumers. A large volume of important and sensitive personal data, such as where, when and how many transactions are conducted, are stored in the system. Improper use of these information may lead to intangible loss of the consumers. Lack of legal protection and knowledge of the conditions of use, such as liability of the consumers in case of system malfunction, are seldom touched upon and most of the consumers are unaware of them until problems arise.

Furthermore, the design of the local EFTPOS was being criticised for not involving consumers' and retailers' participation adequately. The public awareness of EFTPOS service and benefits seem to be low.

Motivation of Study

Despite the potential benefits offered by EFTPOS, consumers seem rather reluctant to use it as an alternative to cash payment. Although the advantages of EPS have been extensively promoted in Hong Kong, the adoption rate remains low. So it is obviously worthwhile to study why customers accept or reject the EFTPOS as an alternative of cash payment.

Earlier studies concentrated on EFTPOS are rare due to the relatively short period after introduction of the first EFTPOS terminal. Most of the studies in this field are focused on the more general electronic fund transfer system (EFTS) which is the backbone of the present EFTPOS system. Empirical studies on EFTS were

basically concentrated on issues such as:

(1) Demographic and psychographic profile of EFTS users and non-users (Mathews and Slocum, 1969; Plummer, 1971; Wiley and Richard, 1974; Ogwo, 1981, Ho, Chan and Hsu 1989);

(2) Attitudes towards credits and bank cards (Etzel, 1974; Porter, Swerdlow and Staples, 1979);

(3) User's prior experience of using other non-bank cards and its relationship with EFTS adoption (Mandel, 1972; Awh and Waters, 1974; Swinyard and Ghee 1987); and

(4) The impact of information exposure on the probability of EFTS adoption (Vinson and McVandon, 1978; Horne and Martin, 1981).

To sum up the earlier studies, age, education, occupation and income have been the most widely used demographic characteristics to differentiate user and non-user groups. Other psychographic characteristics, such as "financial optimism", "contemporary mindedness" and "dynamic leader" are used to classify various user groups. Attitude towards electronic money and experience of using similar products were found to be associated with adoption behaviour of EFTS.

Empirical research on users and non-users of EFTS is mainly focused on the demographics of ATM users. Users have mostly been described as "being younger than non-users, single, more educated professionals with higher income" (Barkow, 1982; Murphy 1983). Yet very few studies have reported on customer motivations, fears and behaviours associated with other electronic fund transfer services such as

EFTPOS. This study will make use of a concept in consumer behaviour - perceived risk - to study the difference among alternative payment methods.

The purpose of this study is to gain more insight into the reasons why the consumers accept or reject EFTPOS services and how the consumers view the EFTPOS services when compared to other conventional payment methods such as credit card and cash.

Chapter Summary

This chapter reviews the early development of EFTPOS in Hong Kong. Although EFTPOS provides many benefits to both consumers and retailers, the adoption rate remains low. Most of the related earlier studies were focused on the profiles of adopters of the services. However, little studies is done on the consumers' risk perception of the closest alternatives to EFTPOS services, cash, and how consumers differentiate EFTPOS from cash.

CHAPTER II

THEORETICAL FRAMEWORK

This chapter provides the theoretical background concerning the problem area. Two different sets of related literature are reviewed: the concept of perceived risk in customer behaviour and the customer's attitude toward electronic payment methods. Other related researches are summarized. The four hypotheses to be tested in this study are developed.

Introduction

A major change in consumer's banking behaviour in the last decade was initiated by the advance of Electronic Fund Transfer System (EFTS). As mentioned before, these include automated teller machines (ATM), cash dispensers (CD), automated payroll deposit, telephone banking, home and office banking, pre-authorized payment and electronic fund transfer at point of sales (EFTPOS) or known as EPS in Hong Kong.

ATM and CD are the most successful examples of electronic banking services around the world. The number of ATM and CD in some developed countries in 1987

is showed in Table 2.1[9]:

Table 2.1 ATM, CD and EFTPOS Terminals in 1987

Country	CD and ATM	EFTPOS terminals
Australia	3,400	8,000
Canada	3,878	n.a.
France	10,000	70,000
Germany	1,500	213
Japan	62,000	41,000
New Zealand	700	3,500
Norway	1,280	5,400
United Kingdom	11,000	4,300
U.S.A.	58,500	50,000

Consumer Adoption of Electronic Banking Technology

The widely used concept to explain the consumer adoption of new banking technology is the "Diffusion of Innovations" framework. Rogers' (1983) work on diffusion of innovations showed that it takes time for innovations to diffuse within a population of consumers. Before large numbers of people begin to use a product or service, a relatively small group of people, known as innovators or early adopters, will try it and be satisfied with it. These people will influence others to use the same product or service. In general, early adopters of a new product tend to be younger, more educated and have higher incomes than later adopters. The demographic user

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9 Organization for Economic Co-operation and Development, Electronic Funds Transfer: Plastic Cards and the Consumer, 1989, p. 107.

profile of ATM adopters in the Western countries has been found to match with the concept of Diffusion of Innovation in the earlier studies of ATM users (Barkow 1982, Murphy 1983, Mears and McCarty 1978). Similar study in Hong Kong (Ho, Chan and Hsu 1990) on demographic characteristics of the EPS users has also showed that EPS adopters tend to be younger, better educated and with higher income.

The Concept of Perceived Risk

Bauer (1960) first introduced the perceived risk concept to explain brand loyalty, opinion leaders, reference groups and pre-purchase deliberations. Since then, several studies have revealed that the kind of product or service, personality of the consumer and situational factors will affect the amount of risk which consumers perceive in making purchase decisions.

There are two basic approaches used to define the concept of "perceived risk". The uncertainty-consequences approach measures perceived risk as a function of the uncertainty of the purchase outcomes and the consequences associated with unfavourable purchase outcomes. In contrast, the risk-component approach identifies and measures several basic, independent dimensions of overall perceived risk (financial risk, performance risk, physical risk, psychological risk and time loss risk). Since this research uses the several dimensions of risk to measure the amount of risk perceived by consumers when they are using alternative payment methods, only the risk-components of perceived risk will be reviewed in the following section.

Multi-dimensional Approach of Perceived Risk

The risk-component approach recognizes different kinds of risk in consumer buying behaviour. Several studies have focused on the multi-dimensional characteristics of perceived risk. The overall perceived risk is predicted by combining several functionally independent variables of risk.

Roselius (1971) analyzed four types of loss, i.e., ego loss, hazard loss, money loss and time loss, and how consumers try to reduce each kind of loss. He found that consumers associated different types and amounts of loss with different purchase situation.

Jacoby and Kaplan (1972) studied the five kinds of risk, i.e., financial, performance, physical, psychological and social risk, and how consumers associate the risk with each of twelve diverse products. They divided psychological risk in two kinds, the psychological risk where the consumer perceives himself after making a wrong purchase, and social risk where the consumer perceives how others will react to his purchase.[10] They concluded that these five dimensions can predict overall perceived risk fairly accurately but noted that time loss should probably be included in their research.

Zikmund (1973) empirically investigated the nature and dimensionality of risk

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[10] To simplify the situation, psychological risk and social risk will be treated as one dimension of risk under psychological risk in this research.

for three product classes, i.e., personal stationery, metal lawn furniture and colour television sets, which ranged from low to high in overall perceived risk. He concluded that:

> "The results of the study provide considerable evidence that perceived risk should be treated multi-dimensionally and with regard to the specific product (service) class. The empirical approach to recovering the principal risk dimensions of several products classes indicates that both the dimensionality and nature of risk components vary by product as the evaluative dimensions change. This implies that the marketer would gain more useful information on why a product (service) is perceived to be risky and, therefore, be in a better position to reduce consumers' risk perception."[11]

Summary of Related Empirical Research

The following reports will be reviewed due to their close relationship with the subject of study in this research, the EFTPOS service. Some of them are direct studies on EFTPOS, others are focused on similar EFTS service, such as ATM. This list of articles will not include all the early studies in this topic but only reflect their availability in the libraries of the Chinese University of Hong Kong and the University of Hong Kong.

Study by Horne (1982)

The research by Horne was a study of consumer's adoption of EFTPOS. EFTPOS devices were utilized in a variety of non-traditional settings for

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11 Zikmund, William George. "An Empirical Investigation of the Multidimensional Nature of Perceived Risk and Related Variables." University of Colorado, 1973, p. 414.

instantaneous funds transfer including both payment and depository transactions. Consumers would gain access to their financial assets through the deployment of EFTPOS terminals instead of only at banking institutions.

This exploratory research also examined the demographic characteristics, perceived attributes, and certain related behavioral dimensions. The results showed that demographic variables do not differentiate among potential users and non-users. However, certain previous behaviour, especially the use of an ATM, did promote the adoption of POS systems. Also, the consumers' perception of the service's attributes were related to probability of use. From a list of eleven recognized attributes, "Enjoyment of Using," "Easing of Personal Routine," and "Time Savings" all varied directly with willingness to use the POS system. "Financial Risk" and "Cost of Using" varied indirectly.

Study by Lau and Ng (1983)

The study by Lau and Ng was an exploratory research on the development of electronic banking in Hong Kong. The needs and applications of computer technology in banking industry was studied. Semi-structured in-depth interviews were arranged with experts in the electronic banking industry including bank officials, computer suppliers and communication network providers. The uses of technology in retail and wholesale banking in Western countries as well as Hong Kong were studied. The major impacts on banks found were: (1) cost reduction, (2) reduction in paper work, (3) needs for new marketing policies, (4) better customer loyalty, and

(5) keen competition as well as opportunities co-operation. The major impacts on customers were: (1) loss of privacy, (2) loss of financial control due to pre-authorized fund transfers, and (3) loss of float.

Study by Motazedi (1984)

The study by Motazedi was an analysis and evaluation of the customers' attitudes toward substitution of human tellers with "Lobby ATM" according to their demographic characteristics such as sex, age, income, education and marital status. Customers' acceptance of the ATM is emphasised and their fear of electronic machines is the determinants in the success of electronic banking.

Questionnaires were distributed to 350 customers throughout San Diego County. A chi-square statistical test and t-test were used to analyze collected data. Responses to the questionnaires were analyzed by groupings of respondents into five categories: customers' sex, age, income, education, and marital status. This study indicated that the majority of customers preferred to handle their banking through human tellers rather than "Lobby ATM". Customers experienced more frustration with "Lobby ATM" than with human tellers. However, customers did not resist ATM. Male customers show greater interest toward ATM than female customers. Moreover, customers were not worried about the safety and security of ATM. Middle and high income customers were less interested in using ATM than lower income customers.

Summary of the Related Articles

The articles reviewed in this section are mainly focused on EFTPOS and related EFTS. The selection criterion is their availability in the libraries of the Chinese University in Hong Kong and the University of Hong Kong.

Astbury (1985)

In 1985, EFTPOS schemes were launched in Hong Kong, Thailand and Singapore. There are numerous advantages to EFTPOS, including: (1) reduced paperwork, (2) instantaneous transactions, (3) decreased fraud, and (4) increased impulse buying. For banks, EFTPOS offers a marketing opportunity and a chance to get ahead in an era of intense competition among financial institutions.

Friis (1985)

The major obstacles for US financial institutions and retailers to accept and implement the concept of EFTPOS include: (1) establishing standards governing the type of service that EFTPOS will be providing and the manner in which customers will be identified, (2) determining who will pay the costs of POS, and (3) winning consumer acceptance. Shared ATM networks should provide the skeleton for further EFTPOS. In general, merchandisers have been reluctant to take part in EFTPOS experiments.

Aoki (1986)

In September 1984, Japan had installed 20,700 CD and 19,000 ATM. The ATM service has been very successful in Japan for several reasons: (1) use of existing systems, (2) high machine performance, (3) fully developed ATM network, and (4) wide distribution of debit cards. Furthermore, electronic banking is expanding into EFTPOS and home banking. However, there are some problems with ATM networks in Japan, including fear of an imbalance in amount of debits and credits and incompatibility of debit cards for international use.

Brobeck (1986)

Six major types of payments systems were evaluated on the basis of relevance, availability, convenience, cost, quality, and safety. The evaluation showed that: (1) Cash continues to be the preferred method of making small payments in person. (2) Money orders remain a popular method for making payments with some risk and inconvenience involved. (3) Checks are the most popular method of payment due to convenience, inexpensive, safe, and widely accepted. (4) Credit card use is growing. While credit cards are convenient for users, there are risks to the institutions issuing them. (5) Debit cards are becoming more accepted. (6) EFTPOS is offering increased convenience to consumers.

Marketing News (1987)

A mail survey of 300 upscale residents in Minneapolis-St. Paul, Minnesota, showed that: (1) 53% of the households surveyed feel most secure with small, hometown banks, and they find ATM transaction and telephone transfer too impersonal. (2) 31% of the respondents, who are more educated and wealthier, favour ATM and are neutral about debit cards and the idea of a cashless society.

Kuroda (1987)

There were four basic kinds of payment systems in use in Japan: (1) cash, (2) direct credit and debit, (3) credit cards, and (4) EFTPOS and home banking. The use of cash had always been important in purchasing goods. The Japanese seldom used personal cheques. However, they preferred to use popular pre-authorized direct debit and credit systems. Some 45 million credit cards were held by customers. Although progress has been slow in EFTPOS and home banking, banks consider them to be important in the future.

Fitzgerald (1988)

A survey by Payment Systems Education Association indicates that a cashless, checkless society is not imminent, despite advances in EFT technology. The survey notes that consumers still favour cash and checks for nearly all kinds of purchases. The survey polled 1,007 adults about which payment system they were more likely

to choose in a variety of situations. The findings indicate that 70% of the respondents regularly used cash to pay for purchases up to US$50. For purchases over US$50, 42% preferred to use personal cheque, 35% chose cash, and 21% chose credit card. Less than 1% of respondents preferred to use EFT with debit cards for purchases. The survey also found that there was variations in payment methods relating to age, income and education. Cash was widely used for all purchases by respondents who earned less than US$25,000 annually and had not attended college.

Ho (1991)

The evolution of EFTS is reviewed in this article. Five major categories of EFTS are studied. (1) Payment wire system is increasingly used for large dollar transfer in corporate level. (2) Cash Management Service (CMS) is used by corporate treasurers to manage the cash position of their corporations. (3) ATM is growing rapidly and expanding into non-bank institutions, such as credit card companies and insurance companies. (4) The growth of EFTPOS is discouraged by the consumers' resistance to change and lack of economic incentive provided to the consumers. (5) The development of home banking is prohibited by the lack of infrastructure and intense competition from other EFTS services. The major issues about EFTS users are resistance to change; loss of the benefit of a float; an increase in set up cost; inadequate product design and features; loss of control of their finances; invasion of personal privacy; system security and risk; lack of legal protection; and lack of consumer awareness, education, and participation.

Sowton (1989)

Each country in Europe is pursuing its own plan for EFTPOS. These is no central body to coordinate their efforts. In the future, Europe will end up with multiple systems and provide little benefit for consumers. For example, the first terminal was installed for retail transactions in UK under the EftPos UK scheme. The service was designed to provide a framework of standards to operate. The EftPos UK card scheme is planned to be an electronic substitute for cheques.

"Banking World's Special EFTPOS Report" (1990)

Results from Banking World's second annual survey of EFTPOS schemes in the UK has found that (1) banks are starting to impose fee on credit card usage that should encourage debit card use. (2) banks are taking over ownership of POS terminals. (3) retailers are encouraged by the law to charge credit card customers more than cash customers. (4) Visa is reissuing its electronic debit card.

Nature and Scope of This Study

According to the results in previous studies in EFTPOS, the innovators or early adopters of EFTPOS will influence other consumers to adopt or reject the new payment method. So, this research is focused on the early adopters of EFTPOS system and determine what they like or dislike. An understanding of behaviour of the early adopters can aim the future development of the EFTPOS service in the right

direction and encourage other later adopters to use the service. The respondents chosen for this research will be restricted to young Hong Kong people age 20-30 and working for full time job.

Development of the Research Hypotheses

There are altogether four hypotheses to be tested in this research. Two of the hypotheses will treat the respondents as a common group and study their risk perception of alternative payment methods and different amounts of purchase. The other two hypotheses will divide the respondents into two groups and test their comparative risk perception on EFTPOS payments.

Hypothesis H1 : **Consumers believe that EFTPOS payment has a different level of perceived risk between cash payment and credit card payment.**

The first hypothesis is concerned with the overall perceived risk for all consumers as a group towards alternative payment methods, i.e. cash, credit card and EFTPOS payment. The subject of study in this hypothesis will be the different payment methods. The five dimensions of perceived risk, i.e., physical risk, performance risk, psychological risk, financial risk and time loss risk, will be studied separately and then the pattern among these five dimensions are used to find out the overall perceived risk for a particular payment method.

Hypothesis H2 : **The level of perceived risk on alternative payment methods varies directly with the amount of purchase.**

The second hypothesis is concerned about the different levels of perceived risk for different amounts of purchase. The level of perceived risk is assumed to vary directly with the amount of purchase, which means a larger amount of purchase will have a higher level of perceived risk. All the respondents will be treated as a homogeneous group in which the subject of study is the amounts of purchase, i.e., small amount purchase and large amount purchase. The three alternative payment methods will be treated separately and then the relative level of risk perception is compared.

Hypothesis H3 : **EFTPOS users have a lower level of perceived risk about EFTPOS payment than non-users.**

The third hypothesis is a test on the different level of perceived risk between EFTPOS users and non-users. The EFTPOS users are the early adopters of this innovative payment method. The trial use of EFTPOS service will lower the level of perceived risk in the mind of the users. The non-users, who refuse to use EFTPOS service, may be due to higher level of risk perceived by the consumers who are not familiar with the service. The respondents will be divided in two groups, the user group and non-user group. The subject of study in this case is the user and non-user groups.

Hypothesis H4 : **More knowledgable consumers have lower level of perceived risk about the use of EFTPOS service than less knowledgable consumers.**

The fourth hypothesis is concerned with the relationship between the level of knowledge on the EFTPOS service and the level of perceived risk. More knowledge on the EFTPOS service is expected to lower the level of perceived risk on using the service. So, more knowledgable users will have a lower level of perceived due to their understanding of the service involved. The less knowledgable users will consider the EFTPOS service to be more risky due to un-familiarity.

Research Hypotheses in the Null Form

The four hypotheses to be tested in this research are rewritten in the null format and summarized as follow:

H1a : Consumers have no difference in the perceived levels of risk among the five dimensions of perceived risk for cash payment.

H1b : Consumers have no difference in the perceived levels of risk among the five dimensions of perceived risk for credit card payment.

H1c : Consumers have no difference in the perceived levels of risk among the five dimensions of perceived risk for EFTPOS payment.

H1d : The relative importance of the five dimensions of perceived risk for alternative payment methods are the same.

H2a : The level of perceived risk for cash payment shows no difference between small and large amount of purchase.

H2b : The level of perceived risk for credit card payment shows no difference between small and large amount of purchase.

H2c : The level of perceived risk for EFTPOS payment shows no difference between small and large amount of purchase.

H3 : The level of perceived risk on EFTPOS payment by EFTPOS users is the same as that of non-users.

H4 : The level of perceived risk on EFTPOS payment by more knowledgable consumers is the same as that of less knowledgable consumers.

Chapter Summary

This chapter reviews the accessible articles and researches in the area of electronic fund transfer system and the perceived risk model to explain the adoption of a particular product or service. The basic findings are that the adoption of EFTPOS service is low due to consumers' resistance, present users of the service are early adopters of EFTPOS who are described as young, educated and high income people. The four hypothesis to be tested were also developed.

CHAPTER III

RESEARCH METHODOLOGY

This chapter explains the research methodology used in this study. The research questionnaire was developed and pretested to verify its completeness. Selection method of respondents and the operation of the survey are explained.

Measurement of Perceived Risk

The five major dimensions of perceived risk (financial, physical, performance, social and psychological risk) are defined by Jacoby and Kaplan (1972) and an additional type of perceived risk of time loss is defined by Ted Roselius (1971). Since the respondents cannot distinguish between psychological and social risks in the pre-test, the two risks are grouped under the same category of psychological risk in this study. Time risk is added to complete the list of perceived risk and therefore five types of risk are studied.

1. Physical Risk

The risk of loss of personal property or potential injury to the consumer.

2. Performance Risk

The risk that the payment method cannot be used to complete a transaction when needed due to refusal of acceptance by the retailer.

3. Psychological Risk

The risk that the use of any payment method will lower the self-image of the consumer or the perceived image of the consumer from others' viewpoint.

4. Financial Risk

The risk that using a payment alternative will lend to financial loss.

5. Time Loss Risk

The risk that the payment method will take up more time to complete than paying by other methods.

The following matrix as given in Table 3.1, showed the different combinations of the five dimensions of perceived risk, the three alternative payment methods, and the two purchasing amounts:

Table 3.1 Questions on Dimensions of Perceived Risk, Alternative Payment Methods and Purchasing Amounts

	Small purchase			Large purchase		
	Cash	Credit Card	EPS	Cash	Credit Card	EPS
Physical Risk	PS1	PS2	PS3	PL1	PL2	PL3
Performance Risk	ES1	ES2	ES3	EL1	EL2	EL3
Psychological Risk	YS1	YS2	YS3	YL1	YL2	YL3
Financial Risk	FS1	FS2	FS3	FL1	FL2	FL3
Time Loss Risk	TS1	TS2	TS3	TL1	TL2	TL3

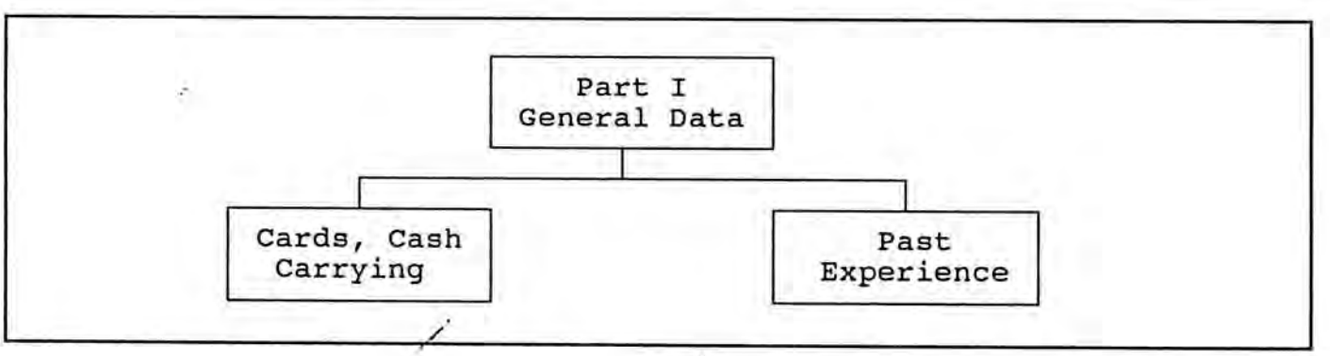
Design of Questionnaire

The research instrument consists of a questionnaire which was divided into four parts. In order to facilitate computer tabulation, a closed-ended structured questionnaire was used. The questionnaire was designed to be self-administered. Instructions for completing the questions are provided in each part. The first part is used to collect general information about the usage of ATM card and EPS services. The second part is concerned with the respondents' perceived risk associated with the use of cash, credit card and EPS. In the third part, the respondents' knowledge on the contractual and legal binding of the use of ATM and EPS services is tested to determined their awareness of the potential risk associated with the service. The fourth part is designed so as to obtain demographic data from the respondents.

Layout of Part I

Part I is divided into two sections. The first section collects information on the number of debit cards or credit cards carried, the cash carrying habit and the amount of spending of the respondents. The second section is concerned with the frequency and experience of using different banking facilities, such as ATMs, bank branch and EFTPOS terminals. The arrangement of this part is showed in Figure 3.1:

Figure 3.1 Arrangement of Questionnaire Part I

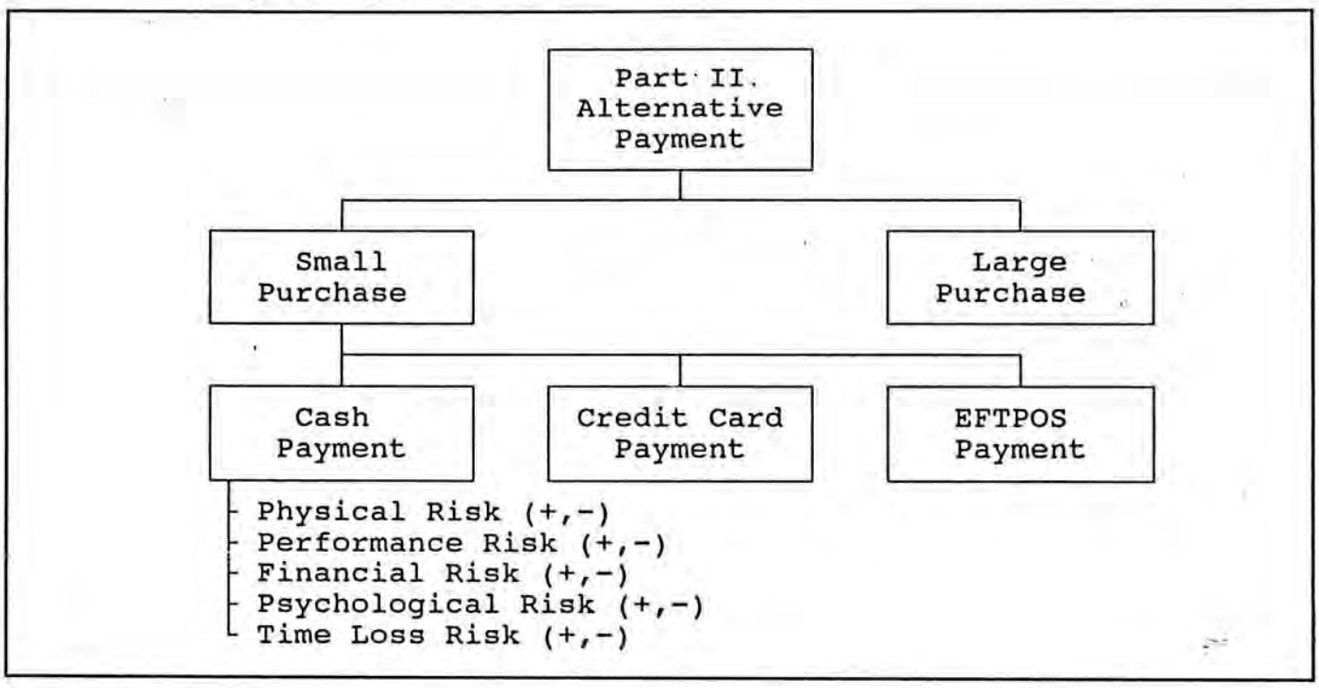


In the first section, the respondents were asked to write down the actual numbers of plastic card that they are carrying. The amount of cash carried by the respondents can be chosen from the 7 categories of cash amounts. In the second section, the data on monthly frequency of using ATM, EFTPOS and bank branches were collected by asking the respondents to write down the actual frequency of usage. If they did not use a particular services, they would enter "0" under that service.

Layout of Part II

Part II is the major part of this research. It contains the tests on the five dimensions of perceived risk under different amounts of the purchase with alternative payment methods. This part is divided into two sub-parts: the first sub-part only deals with small purchase situation, and the second sub-part deals with large purchase situation. Each sub-part is further divided in three sections. Each section contains the same set of questions on different payment methods, i.e. cash, credit card and EFTPOS. Each set has ten questions. The ten questions are further divided into five categories of perceived risk, namely, physical risk (Q1 and Q6), performance risk (Q2 and Q7), financial risk (Q3 and Q8), psychological risk (Q4 and Q9) and time loss risk (Q5 and Q10). That means each category of perceived risk will have two questions. One of the questions will be a positive statement and the other will be a negative statement on the same kind of perceived risk. The arrangement of second part is given in Figure 3.2:

Figure 3.2 Arrangement of Questionnaire Part II



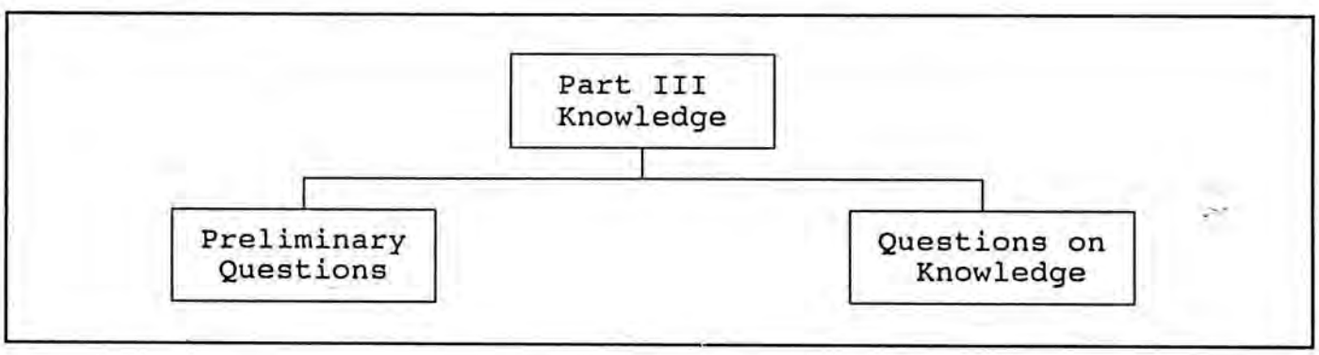
All respondents were asked to rate on a 6-point Likert scale whether they would agree or disagree with the statement made. The negative statements were used to ensure reliability of the data collected. The results of the negative statements will be re-coded and added to that of positive statements to find the average score.

Layout of Part III

The third part consists of two preliminary questions and ten questions on knowledge of the regulations governing the use of EFTPOS services. The two preliminary questions were used to test if the respondents know and understand the regulations. The other ten questions were extracted from three ATM card application forms, i.e., Hongkong Bank, Hang Seng Bank and Bank of China. Common regulations from the three application forms were grouped together and converted into

questions in this part. The ten knowledge testing questions have both true and false statements. The respondents were asked to state their knowledge of each question by choosing one of the three choices: "True. The statement is right.", "False. The statement is wrong." and "Not sure." The arrangement of questions in the third part is given in Figure 3.3:

Figure 3.3 Arrangement of Questionnaire Part III



The number of correct answers will be counted and be analyzed with the level of perceived risk on EFTPOS service by the respondents.

Layout of Part IV

The final section collects the demographic data of respondents such as age, sex, marital status, education, annual personal income, position and type of business involved. All questions, except the question on age, allow the respondents to choose one from several choices.

Definition of Small and Large Purchases

The two products chosen in this research are clothing and television set to act

as examples of small purchase and large purchase respectively. The criterion in choosing these two products is mainly based on the dollar value of the two products and their common availability in department store. The relative amount of purchase is the subject of test in this study. So, the amount of purchase is emphasized in the instructions provided in related questions in order to remind the respondents of the amount of purchase.

The first product, clothing, is chosen because the average value of clothing, (not fashion), in a department store is about $300-$500[12]. The value of $300 is chosen because it amounts to about 5% of the average personal income of Hong Kong young people (around $6,000), who are the target for this research. So, buying clothing is considered to be a common experience of the consumers and it is considered to be a smaller purchase decision.

The value of the other product, i.e. television set, is chosen on the basis of average value of standard 20" television sets sold in the three department stores. The value of $3,000 will be about 50% of the monthly income of young people in Hong Kong (around $6,000). The decision of buying a television set is considered to be a large purchase decision relative to the personal income of the respondents.

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12 Convenience sampling at Wing On, Yaohan and Seiyu department stores for youngsters' clothing and 20" standard features television set.

Pre-testing and Adjustments

Two separate pretests of the questionnaire were conducted during the initial phase of survey. Each pre-test consisted of six respondents who were chosen randomly from the students population in the Chinese University of Hong Kong. The first pre-test was used to collect information and suggestions on the contents of the questionnaires. All respondents were asked to fill out the preliminary questionnaire and asked verbally for any missing items. The missing items were incorporated into the second pre-test. The second pre-test was used to test the respondents' understanding of the questions. Each respondent was asked to fill out the revised version of questionnaires and asked verbally about their understanding and meaning of each question. Any misleading questions were revised and tested on the next respondent.

Selection of Respondents

The survey was conducted in Hong Kong in early April 1991. The target group is consumers between the age of 20 to 30 because this research aims at studying the risk perception of the early adaptors of EFTPOS services who are most likely to be the younger generation in Hong Kong. Convenience sampling method was employed and respondents were selected randomly from high traffic areas in department stores and fast food restaurants in the area of Causeway Bay, Mong Kok and Kwun Tong.

Two preliminary questions were asked verbally in order to qualify the respondents. The two questions are "Do you carry any ATM card or credit card?" and "Are you under age of 30?" If the answers to the two questions are "yes' then the respondents will be asked to fill out the self-administered questionnaire. Before the respondents start to fill out the questionnaires, the definitions of EPS and ATM given at the front page of the questionnaire were repeated to make sure the respondents understand the meaning.

Measurement Methods

The dimensions of perceived risk were studied using the model developed by Peter & Tarpey (1975), in which the construct was "depicted not only as a multiplicative function of probability of loss and importance of loss but also an additive model of the various facets of risk."[13] This model is selected because it employs operational definitions of risk that are very similar to those used by Jacoby and Kaplan. It has also included time risk as one of the perceived risk dimensions. The Peter/Tarpey model treats the six dimensions of overall risk as independent dimensions. In this study, the wordings used in Peter and Tarpey model for psychological and social risk were combined to facilitate respondents understanding and hence improve accuracy of the results.

However, no formal operational definition of overall perceived risk is given

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[13] Peter, J.P. & Tarpey, L. Sr. "A Comparative Analysis of Three Consumer Decision Strategies." Journal of Consumer Research. 1975, p. 31.

in the Peter/Tarpey model. In order to determine and compare the consumers' perception of overall risk with the five dimensions of risk (psychological and social risk are combined), the relative importance (ranked by the mean scores) of the five dimensions of risk are compared for different payment methods to yield the difference in overall perceived risk among the three payment methods.

Statistical Tests Employed

To analyze the data obtained, different kinds of statistical methods will be used depending on the nature of the hypotheses. These include paired and grouped t-tests, chi-square tests, and so on.

The 60 questions of the five dimensions of perceived risk (2 purchase amounts x 3 payment methods x 5 dimensions of perceived risk x 2 questions) will be analyzed by first assigning scores from 1 to 6 to each response. While "1" represents that the respondent strongly disagreed with the statements and has the lowest level of perceived risk level, "6" will represent that the respondent strongly agreed with the statements and has the highest perceived risk level. All the negative statements will be re-coded to yield the same direction as positive statements. The two scores will be averaged to yield the level of perceived risk for each payment method.

The mean score and standard deviation for the averaged value will be calculated. For each payment method, the differences in mean scores among the five dimensions of perceived risk will be analyzed by paired t-tests to find out whether the

differences in means are statistically significant or not. The Alpha value is set at 0.05 level.

The same operation will be repeated on small purchase and large purchase situations. The significance level is also set at 0.05 level. A profile of the differences in mean scores for each payment method under different purchase amounts will be drawn.

The mean scores of small and large purchase for each dimension of perceived risk will then be averaged in order to yield a mean score of overall perceived risk. The dimensions of perceived risk for each payment method will be analyzed by paired t-tests on the differences in means.

The second part of the statistical tests involves grouped t-test on EFTPOS users and non-users. Respondents' answers to question 8, "On average, how many times do you use EPS services in a month?", will be used as the evidence that the respondent is an EPS user or non-user. The answer '0' will be treated as EFTPOS non-users and the answer not equal to '0' will be treated as EFTPOS users. The respondents will then be divided into two groups, i.e. user group and non-user group. Grouped t-test on the mean difference of perceived risk dimensions between these two groups are used.

In the third part, the answers to question 96 to 105 about the knowledge of EFTPOS services are used to distinguish between more knowledgable consumers and

less knowledgable consumers. The number of correctly answered questions will be counted and used as an indicator of the respondents' EFTPOS knowledge. Any respondent who has answered more than five questions correctly will be treated as knowledgable consumer. Respondents who have five or less than five correct answers will be treated as less knowledgable consumers. A chi-square test is performed to test the relationship between the level of knowledge (more knowledgable and less knowledgable) and the level of perceived risk. The perceived risk level is also grouped into two categories, i.e. high risk group and low risk group. The high risk group consumers are those respondents who tend to agree with the questions on perceived risk on Part II of the questionnaire, i.e., their mean scores for the five dimensions of perceived risk are higher than or equal to 3.5. The low risk group has mean score below 3.5 in the same set of questions.

Response Rate

A total of 200 questionnaires were distributed and 184 questionnaires were returned with a response rate of 92%. Such a high response rate was mainly due to the fact that the questionnaires were collected right after the respondents completed the forms. Out of the returned questionnaires, seven questionnaires were incomplete and were discarded, producing a total of 177 usable questionnaires (89% of the total questionnaires distributed).

The demographic variables of the respondents, such as sex, age, personal income, marital status, education level, position held and line of business involved

are graphed in Figure A.1, A.2, A.3, A.4, A.5, A.6 and A.7 respectively. (see the Appendices)

Chapter Summary

This chapter reviews the five dimensions of perceived risk to be tested in this study. They are financial risk, physical risk, performance risk, psychological risk and time loss risk. The design of questionnaire was stated and the operation procedure of the survey was explained. The methodology used to test the results includes paired and grouped t-test and chi-square test depending on the nature of the hypothesis tested.

CHAPTER IV

RESEARCH FINDINGS

In this chapter, the results of the survey are presented and the four hypotheses are tested accordingly. The statistical results will be tabulated. The findings in each section will be summarized by formulation of equations indicating the relative importance among various dimensions of risk.

Introduction

In order to simplify the equation formulation process, the following short-hand notations are used:

$ stands for small purchase;

$$$ stands for large purchase;

CASH stands for cash payment;

CREDIT stands for credit card payment;

EFTPOS stands for electronic payment by EFTPOS;

$\approx$ stands for no statistically significant difference and;

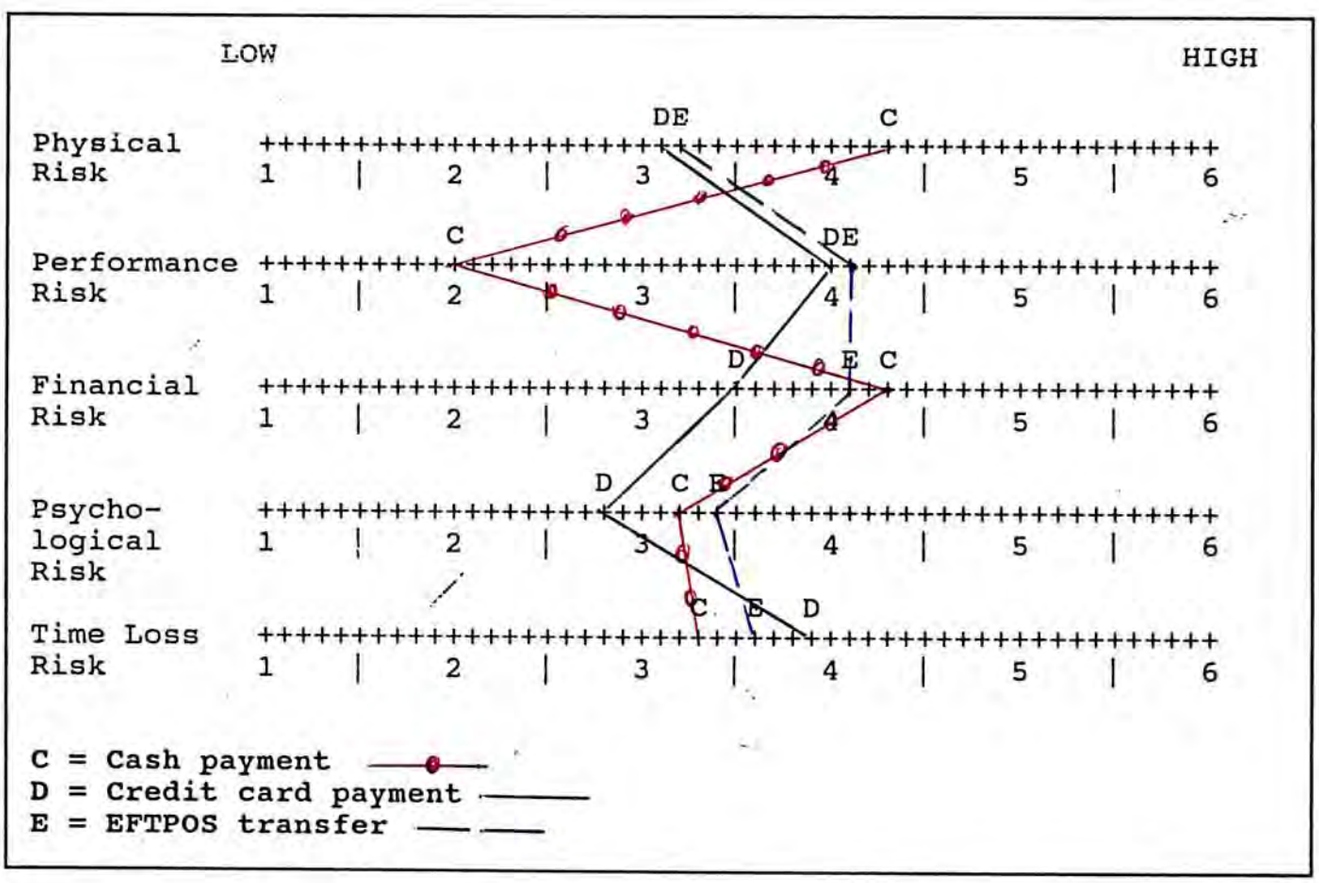
$>$ stands for statistically significant difference (greater risk perception).

All the formulated equations are duplicated in the Appendix.

Overall Perceived Risk

The average scores for small and large purchase for the five dimensions of perceived risk for the three alternative payment methods are summarized in Figure 4.1:

Figure 4.1 Comparison of Perceived Risk for Alternative Payment Methods



The five dimensions of perceived risk for credit card vary in a similar pattern as the EFTPOS. Performance risk and time loss risk are the two important considerations for consumers to choose either credit card or EFTPOS. The only common point for cash payment and EFTPOS payment is the financial risk dimension. Both of these two payment methods were rated by the respondents being the highest in financial risk when compared to other dimensions of perceived risk.

One common point among three payment alternatives is that all of them have very low psychological risk. The respondents feel no difference in self image by using any one of the three alternatives. One significant difference between cash and the group of credit card and EFTPOS is that the performance risk of cash payment is much lower then the performance risk of credit card and EFTPOS payment. In fact, performance risk for credit card and EFTPOS is the highest among other dimension of risk. Another difference is that cash payment has a very high physical risk but credit card and EFTPOS have very low perception of physical risk.

In summary, the respondents perceive credit card payment and EFTPOS payment as having similar level of risk for the five risk dimensions. On the other hand, EFTPOS is seen by the respondents to be very different from cash payment in terms of different dimensions of perceived risk.

Perceived Risk for Cash Payment

The average scores of small and large purchase for the five dimensions of perceived risk for cash payment are summarized in the following Table 4.1:

Table 4.1 The Five Dimensions of Perceived Risk for Cash Payment

Physical Risk	4.35	4.35	4.35	4.35						
Performance Risk	1.99				1.99	1.99	1.99			
Psychological Risk		3.20			3.20			3.20	3.20	
Time Loss Risk			3.37			3.37		3.37		3.37
Financial Risk				4.31			4.31		4.31	4.31
t-value	24.4	14.8	12.2	0.4	-16.6	-18.3	-26.3	-2.5	-13.1	-11.2
p-value	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.01	0.00	0.00
Sig. Diff.	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

For cash payment, there are different levels of perceived risk for the five dimensions. Use of cash is considered to be most risky in terms of its higher physical risk, which means that the consumers are afraid of being robbed. Loss of cash is also treated as a loss of physical property which is related to financial loss. The perception of financial risk is also high for the cash payment. However, the difference in mean scores between physical risk and financial risk is not statistically significant.

There are statistically significant difference in the mean scores between time risk, psychological risk and performance risk for cash payment. Time loss risk is the third highest risk after physical and financial risk. Time loss is followed by psychological risk and the lowest risk perception is the performance risk. The lowest level of performance risk can be explained by the fact that cash payment would be less likely to get rejected by merchants. Consumers can always use cash to pay for any amount of purchase. The results for comparing various risk dimensions for cash payment is in next page:

$$\text{Physical Risk}_{CASH} \approx \text{Financial Risk}_{CASH} > \text{Time Loss Risk}_{CASH} > \text{Psychological Risk}_{CASH} > \text{Performance Risk}_{CASH} \quad \ldots\ldots\ldots \quad (4.1)$$

Perceived Risk for Credit Card Payment

The comparison of the five dimensions of risk perception for credit card payment is showed in Table 4.2:

Table 4.2 The Five Dimensions of Perceived Risk for Credit Card Payment

Physical Risk	3.19	3.19	3.19	3.19						
Performance Risk	3.97				3.97	3.97	3.97			
Psychological Risk		2.83			2.83			2.83	2.83	
Time Loss Risk			3.95			3.95		3.95		3.95
Financial Risk				3.57			3.57		3.57	3.57
t-value	-8.3	4.5	-8.1	-4.5	13.2	0.32	4.0	-13.4	-7.7	3.76
p-value	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.01	0.00	0.00
Sig. Diff.	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

For credit card payment, the level of perceived risk between different pairs of dimensions is significantly different except for performance risk and risk of time loss. The performance risk is the highest for credit card payment because the respondents consider that not every retail outlets will accept credit card or the merchants may add additional charges for the use of credit card. So the risk of unable to use credit cards to complete a transaction is high. The time taken to process credit card transaction is also a critical factor in choosing credit card. The risk of taking too much time (time risk) to complete a transaction is about the same level as the inability to use credit card (performance risk). This is showed by the test

results that there is no statistically significant difference between performance risk and time loss.

The second, third and fourth most important dimensions of perceived risk for credit card payment are financial risk, physical risk and psychological risk respectively. The financial risk has the second highest position which signifies that the respondents consider the payment by credit cards is financially risky. They are afraid of being unable to stop wrong payment which will lead to financial loss. Physical risk of credit card payment is low because the respondents are not concerned about being robbed when carrying many credit cards. The lowest risk dimension is the psychological risk in which the respondents think that the use of credit card to pay has little effect on their own image. The summary equation for perception of risk dimensions on credit card payment is given below:

$$\text{Performance Risk}_{\text{CREDIT}} \approx \text{Time Loss Risk}_{\text{CREDIT}} > \text{Financial Risk}_{\text{CREDIT}} > \text{Physical Risk}_{\text{CREDIT}} > \text{Psychological Risk}_{\text{CREDIT}} . \quad (4.2)$$

Perceived Risk for EFTPOS Payment

The perceived dimensions of risk with electronic payment (EFTPOS) is given in Table 4.3:

Table 4.3 The Five Dimensions of Perceived Risk for EFTPOS Payment

Physical Risk	3.17	3.17	3.17	3.17						
Performance Risk	4.08				4.08	4.08	4.08			
Psychological Risk		3.40			3.40			3.40	3.40	
Time Loss Risk			3.65			3.65		3.65		3.65
Financial Risk				4.14			4.14		4.14	4.14
t-value	-9.6	-2.8	-5.7	-10.9	10.3	5.9	-0.8	-4.0	-9.8	-5.9
p-value	0.00	0.01	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00
Sig. Diff.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

The level of financial risk and performance risk for EFTPOS payment are the highest and no statistically significant differences between these two dimensions of risk can be concluded from the results. Risk of time loss is the third highest risk dimension, psychological risk ranks the fourth and physical risk is the lowest.

The respondents perceive that the use of EFTPOS, which directly debit their bank accounts and credit the retailers' accounts, has high financial risk because they are not able to stop payment once the transfer is initiated. They will not be able to get refunds because the money is already transferred to the retailers' accounts. As such they will be subjected to financial loss. Furthermore, the risk of unavailability of EFTPOS terminal is very high which results in the high performance risk.

Risk of time loss in using EFTPOS is also high. The respondents think that the transactions by EFTPOS will be time-consuming. However, use of EFTPOS will not seriously affect the self image of the respondents and the risk of robbery is also

low. The equation summarizing the relationship among the five dimensions of perceived risk for EFTPOS payment is given below:

$$\text{Financial Risk}_{EFTPOS} \approx \text{Performance Risk}_{EFTPOS} > \text{Time Loss Risk}_{EFTPOS} > \text{Psychological Risk}_{EFTPOS} > \text{Physical Risk}_{EFTPOS} . \quad (4.3)$$

Perceived Physical Risk

Definition

The perceived physical risk is defined as "risk of loss of personal property or potential injury to the consumer". Therefore, if the consumer loses his money or plastic cards, this event will be treated as the loss of personal property. Although the loss of cash or replacement cost of lost cards may be interpreted as a financial loss after he discovers the missing, cash and cards will be treated as some form of physical properties, while losing any kinds of property will involve some financial losses. The risk of physical injury is treated as the possibility that the consumer may be hurt if he is robbed.

Physical Risk in Small Purchase

The results of the comparison of physical risk among alternative payment methods is showed in Table 4.4:

Table 4.4 Physical Risk for Alternative Payments in Small Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
4.13	3.18		9.66	0.000	Yes
4.13		3.19	8.82	0.000	Yes
	3.18	3.19	-0.15	0.877	No

The physical risk for cash payment is consistently higher than that of credit card and EFTPOS payment even in small purchase amount. This result is expected since consumers are well aware of the loss of cash but place lower emphasis on the plastic cards which may be re-issued. Furthermore, the physical risk for using credit card and EFTPOS payment has about the same score which shows that consumers do not distinguish between these two payment methods in term of physical risk. The physical risk for small purchase is summarized as follow:

$$\text{Physical Risk}_{\$,\text{CASH}} > \text{Physical Risk}_{\$,\text{CREDIT}} \approx \text{Physical Risk}_{\$,\text{EFTPOS}} \quad . \; . \quad (4.4)$$

Physical Risk in Large Purchase

The t-test results of the mean differences of physical risk in large purchase situations using the three payment methods are given in Table 4.5:

Table 4.5 Physical Risk for Alternative Payments in Large Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
4.55	3.19		13.69	0.000	Yes
4.55		3.13	13.56	0.000	Yes
	3.19	3.13	1.14	0.254	No

The physical risk for large cash payment is higher than those of the credit card payment or EFTPOS. The same reason used in explaining physical risk of small purchase can be applied here. Consumers consider that the use of cash payment in large purchase more risky. No significant difference is found in consumers' perceived physical risks in credit card payment or EFTPOS. The relationship is summarized below:

$$\text{Physical Risk}_{\$\$\$,\text{CASH}} > \text{Physical Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Physical Risk}_{\$\$\$,\text{EFTPOS}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.5)$$

Overall Physical Risk

The comparison of physical risk between small and large purchase by the use of three alternative payment methods is given in Table 4.6:

Table 4.6 Overall Physical Risk for Alternative Payments

Payment Method	Small	Large	t-value	p-value	Sig. Diff.
Cash	4.13	4.55	-5.00	0.000	Yes
Credit Card	3.18	3.20	-0.19	0.852	No
EFTPOS	3.19	3.13	1.13	0.260	No

The physical risk for cash payment of large purchase is higher than small purchase. This is understandable since consumers are more afraid of losing a larger amount of cash than a smaller amount. The perceived physical risk for credit card and EFTPOS in small or large purchase amount are the same since the risk of losing the cards and the potential of robbery will be the same for any amount of purchase. The overall physical risk is listed in next page:

$$\text{Physical Risk}_{\$\$\$,\text{CASH}} > \text{Physical Risk}_{\$,\text{CASH}} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.6)$$

$$\text{Physical Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Physical Risk}_{\$,\text{CREDIT}} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.7)$$

$$\text{Physical Risk}_{\$\$\$,\text{EFTPOS}} \approx \text{Physical Risk}_{\$,\text{EFTPOS}} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.8)$$

Perceived Performance Risk

Definition

The performance risk is defined as "risk of that payment method cannot be used to complete a transaction when needed due to refusal of acceptance by the retailer." If the consumers choose one kind of payment which is, however, not accepted by retailers or additional charges is required, the consumers will be forced to use another payment alternative. These two situations will count as performance risk.

Performance Risk in Small Purchase

The performance risk for various payment alternatives in small purchase situations in given in Table 4.7:

Table 4.7 Performance Risk for Alternative Payments in Small Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
1.92	4.09		-19.16	0.000	Yes
1.92		4.13	-19.57	0.000	Yes
	4.09	4.13	-0.60	0.553	No

Paying small purchase by cash has lower performance risk than credit card or EFTPOS payments. Consumers consider that cash payment is less likely to be refused by the merchants. It is a real situation that Hong Kong merchants prefer liquid cash instead of credit sales. However, consumers see no difference in performance risk for credit card or EFTPOS in small purchase. They think that credit card payment may not be welcomed by the shops if they only buy small amount of goods. Although the absolute number of EFTPOS terminals seems large in Hong Kong, the relative amount of terminals compared to the total number of shops remains very small. So, consumers will have a higher performance risk in using EFTPOS because not too many shops have the terminals. One further point is that consumers perceive both credit card and EFTPOS payments to be risky due to potential refusal of acceptance in small purchase situations. The summary of performance risk for small purchase is given below:

$$\text{Performance Risk}_{\$,EFTPOS} \approx \text{Performance Risk}_{\$,CREDIT} > \text{Performance Risk}_{\$,CASH} \quad (4.9)$$

Performance Risk in Large Purchase

The results of comparing performance risks for alternative payment methods

in large amount purchase is given in Table 4.8:

Table 4.8 Performance Risk for Alternative Payments in Large Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
2.05	3.84		-15.56	0.000	Yes
2.05		4.01	-16.62	0.000	Yes
	3.84	4.01	-1.99	0.048	Yes

In the large dollar purchase situations, the EFTPOS is considered to have the highest performance risk that the shop may not have the EFTPOS/EPS terminals to carry out the transactions. It is mainly because the coverage of EPS terminals is low. The low terminal density discourages consumers from using it in turn gives low incentive for the retailers to install the terminals. Furthermore, the daily transfer limit for the EFTPOS will also prevent the consumers to use it in large purchase situations. The performance risk of credit card is lower than that of EFTPOS, which means consumers is less worry about the acceptance of the credit card by the retailers in sizable purchase. Cash payment is always welcomed by merchants in any amount of purchase so the performance risk is the lowest. The summary equation for large purchase performance risk is given below:

$$\text{Performance Risk}_{\$\$\$,\text{EFTPOS}} > \text{Performance Risk}_{\$\$\$,\text{CREDIT}} > \text{Performance Risk}_{\$\$\$,\text{CASH}} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.10)$$

Overall Performance Risk

The comparison of large and small purchase for the three payment methods is given in Table 4.9:

Table 4.9 Overall Performance Risk for Alternative Payments

Payment Method	Small	Large	t-value	p-value	Sig. Diff.
Cash	1.92	2.05	-1.62	0.106	No
Credit Card	4.09	3.84	4.15	0.000	Yes
EFTPOS	4.13	4.01	2.07	0.040	Yes

For cash payment, no significant difference was found in performance risk for small or large purchase. Both credit card payment and EFTPOS have significantly higher performance risk when used in small purchase. Consumers consider the retailers' acceptance of credit card or EFTPOS payment in smaller amount is low and therefore the performance risk is higher. The performance risk of the three different payment methods in the two purchase situations are summarized in the following three equations:

$$\text{Performance Risk}_{\$\$\$,\text{CASH}} \approx \text{Performance Risk}_{\$,\text{CASH}} \quad \ldots\ldots\ldots \quad (4.11)$$

$$\text{Performance Risk}_{\$,\text{CREDIT}} > \text{Performance Risk}_{\$\$\$,\text{CREDIT}} \quad \ldots\ldots\ldots \quad (4.12)$$

$$\text{Performance Risk}_{\$,\text{EFTPOS}} > \text{Performance Risk}_{\$\$\$,\text{EFTPOS}} \quad \ldots\ldots\ldots \quad (4.13)$$

Perceived Psychological Risk

Definition

The perceived psychological risk is the risk that "the use of any payment method will lower the self image of the consumer or the consumer will feel bad about the use of a particular payment." Another dimension of perceived risk, the social risk, is also included in the definition of psychological risk which implies that the

other people may laugh at the consumer who uses a particular payment method . Thus, it will create a negative impact on the self image.

Psychological Risk in Small Purchase

The psychological/social risk for small purchase is given in Table 4.10:

Table 4.10 Psychological Risk for Alternative Payments in Small Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
3.24	2.81		5.63	0.000	Yes
3.24		3.46	-3.34	0.001	Yes
	2.81	3.46	-8.61	0.000	Yes

When the consumer is buying goods in small purchase situations, the psychological risk for EFTPOS is the highest. The less risky payment is by cash and credit card payment has the lowest psychological risk. The consumers will see the EFTPOS payment not welcome by the retailers and be afraid that it will affect their own image. Payment by credit cards is perceived to have a high social status due to the common emphasis on social status by credit card promotions. The comparison of psychological risks for different payment methods under small purchase situations is given below:

$$\text{Psychological Risk}_{\$,\text{EFTPOS}} > \text{Psychological Risk}_{\$,\text{CASH}} > \text{Psychological Risk}_{\$,\text{CREDIT}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.14)$$

Psychological Risk in Large Purchase

The psychological risks for the three alternative payment methods in large value purchase are given in Table 4.11:

Table 4.11 Psychological Risk for Alternative Payments in Large Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
3.14	2.84		3.84	0.000	Yes
3.14		3.33	-2.84	0.005	Yes
	2.84	3.33	-7.42	0.000	Yes

The psychological risk for large value purchase follows the same pattern for small purchase, that is, EFTPOS has the highest psychological risk; cash payment, the second; and credit card, the lowest. The same reasoning used in the small purchase situations can also be applied in the large purchase circumstance. The equation for large purchase psychological risk is summarized below:

$$\text{Psychological Risk}_{\$\$\$,\text{EFTPOS}} > \text{Psychological Risk}_{\$\$\$,\text{CASH}} > \text{Psychological Risk}_{\$\$\$,\text{CREDIT}} \quad (4.15)$$

Overall Psychological Risk

The comparison of small purchase and large purchase in term of psychological risk is given in Table 4.12:

Table 4.12 Overall Psychological Risk for Alternative Payments

Payment Method	Small	Large	t-value	p-value	Sig. Diff.
Cash	3.24	3.14	1.40	0.164	No
Credit Card	2.81	2.84	-0.52	0.606	No
EFTPOS	3.46	3.33	2.66	0.009	Yes

There are no significant difference between the overall psychological risk in small purchase and in large purchase for cash and credit card payment. This means consumers think that the use of cash or credit card will not affect their own status in any purchase amount. However, there is statistically significant difference in overall psychological risk for EFTPOS payment in different amount of payment. Small payment by EFTPOS payment will affect the image of the users and they are feeling bad for using EFTPOS in small purchase situations. The results are summarized in the following equations:

$$\text{Psychological Risk}_{\$\$\$,\text{CASH}} \approx \text{Psychological Risk}_{\$,\text{CASH}} \quad (4.16)$$

$$\text{Psychological Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Psychological Risk}_{\$,\text{CREDIT}} \quad (4.17)$$

$$\text{Psychological Risk}_{\$,\text{EFTPOS}} > \text{Psychological Risk}_{\$\$\$,\text{EFTPOS}} \quad (4.18)$$

Perceived Financial Risk

Definition

Financial risk is defined as "the risk that using a payment alternative will lead to financial loss". To lower the level of perceived financial risk, consumers may switch to another payment method. Financial loss means that the consumer cannot

get refund when needed or he is not able to stop payment after he discovers the mistake. So, he will suffer from money loss resulting from the inability to reverse the transaction.

Financial Risk in Small Purchase

The financial risk for alternative payment methods under small value purchase situations is given in Table 4.13:

Table 4.13 Financial Risk for Alternative Payments in Small Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
4.20	3.54		5.86	0.000	Yes
4.20		4.20	-0.03	0.975	No
	3.54	4.20	-7.35	0.000	Yes

The financial risk for cash payment and EFTPOS payment has no significant difference in small purchase situations. Consumers view cash payment and EFTPOS to be equally risky. They are more likely to suffer from financial loss by using either one of the two payment methods. They can reduce the financial risk by switching to credit card payment which has a lower perceived financial risk. The summarized formula is presented below:

$$\text{Financial Risk}_{\$,\text{CASH}} \approx \text{Financial Risk}_{\$,\text{EFTPOS}} > \text{Financial Risk}_{\$,\text{CREDIT}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.19)$$

Financial Risk in Large Purchase

The large purchase financial risk is given in Table 4.14:

Table 4.14 Financial Risk for Alternative Payments in Large Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
4.41	3.58		7.20	0.000	Yes
4.41		4.09	3.86	0.000	Yes
	3.58	4.09	-6.36	0.000	Yes

The large purchase by cash has the highest perceived financial risk. The consumers are cautious about paying large amount of cash and not able to get refund if the transaction needed to be reversed. Second in the list is EFTPOS. The EFTPOS cannot be stopped once the electronic transfer is initiated. The credit card payment has the lowest financial risk in both small and large payment because the consumers will not need to pay the merchants immediately. The possibility of reversing the transaction paid by credit card is a critical factor to lower the financial risk of credit card payment. The equation governing the three payments in term of financial risk is listed below:

$$\text{Financial Risk}_{\$\$\$,\text{CASH}} > \text{Financial Risk}_{\$\$\$,\text{EFTPOS}} > \text{Financial Risk}_{\$\$\$,\text{CREDIT}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.20)$$

Overall Financial Risk

The overall comparison of financial risks under small purchase and large purchase situations is given in Table 4.15:

Table 4.15 Overall Financial Risk for Alternative Payments

Payment Method	Small	Large	t-value	p-value	Sig. Diff.
Cash	4.20	4.41	-2.25	0.026	Yes
Credit Card	3.54	3.58	-0.64	0.524	No
EFTPOS	4.20	4.09	1.31	0.192	No

There is no significant difference between small purchase and large purchase if the transaction is paid by credit card or EFTPOS. However, the large cash payment has higher perceived financial risk than that of small cash payment because consumers will consider that if the amount of money is large, they are likely to suffer from financial loss. The three payments in small and large purchase situations are compared below:

$$\text{Financial Risk}_{\$\$\$,\text{CASH}} > \text{Financial Risk}_{\$,\text{CASH}} \quad \ldots\ldots\ldots\ldots \quad (4.21)$$

$$\text{Financial Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Financial Risk}_{\$,\text{CREDIT}} \quad \ldots\ldots\ldots\ldots \quad (4.22)$$

$$\text{Financial Risk}_{\$\$\$,\text{EFTPOS}} \approx \text{Financial Risk}_{\$,\text{EFTPOS}} \quad \ldots\ldots\ldots\ldots \quad (4.23)$$

Perceived Risk of Time Loss Risk

Definition

The risk of time loss is perceived by the consumers as "the payment process will take up more time to complete than paying by other methods". If the consumers think that a particular method will cause them more time to complete a transaction, they will consider this payment method to be more time consuming and so it is more risky in time loss.

Risk of Time Loss in Small Purchase

The time loss importance in small purchase situations is given in Table 4.16:

Table 4.16 Risk of Time Loss for Small Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
3.28	3.94		-7.28	0.000	Yes
3.28		3.61	-3.81	0.000	Yes
	3.94	3.61	4.60	0.000	Yes

The credit card is considered to the most time consuming and have the highest time loss risk for small purchase. EFTPOS is perceived to be the second most time consuming method due to the complexity involved in operating the EPS terminals. Cash is viewed as the least time consuming payment on small dollar amount. The summary formula is given below:

$$\text{Time Loss Risk}_{\$,\text{CREDIT}} > \text{Time Loss Risk}_{\$,\text{EFTPOS}} > \text{Time Loss Risk}_{\$,\text{CASH}} \quad (4.24)$$

Risk of Time Loss in Large Purchase

Table 4.17 Risk of Time Loss for Alternative Payments in Large Purchase

Cash	Credit	EFTPOS	t-value	p-value	Sig. Diff.
3.44	3.96		-6.13	0.000	Yes
3.44		3.68	-2.87	0.025	Yes
	3.96	3.68	3.52	0.001	Yes

The difference in time risk for the three payment methods in large purchase follows the same pattern as small purchase. Cash payment has the lowest time risk in all purchase. Payment by credit card has the highest risk in time loss risk and EFTPOS has the second highest time risk. The summarizing equation for large purchase for time loss is given below:

$$\text{Time Loss Risk}_{\$\$\$,\text{CREDIT}} > \text{Time Loss Risk}_{\$\$\$,\text{EFTPOS}} > \text{Time Loss Risk}_{\$\$\$,\text{CASH}} \quad (4.25)$$

Overall Risk of Time Loss

The comparison for time risk in small and large purchase situations is given in Table 4.18:

Table 4.18 Overall Risk of Time Loss for Alternative Payments

Payment Method	Small	Large	t-value	p-value	Sig. Diff.
Cash	3.28	3.44	-2.06	0.041	Yes
Credit Card	3.94	3.96	-0.49	0.626	No
EFTPOS	3.61	3.68	-0.94	0.349	No

Payment by credit card and EFTPOS have no difference in time loss for any amount of purchase. The complicated process to operate credit card and EFTPOS will not be changed by the amount of payment. The time involved in transaction will not change with the purchase amount and so is the risk of time loss. However, the time taken to complete transaction by cash is affected by the dollar value involved. A large cash purchase will be taken more time to complete whether a small cash payment has lower risk of time loss. The equations for the three comparisons are

given below:

$$\text{Time Loss Risk}_{\$\$\$,\text{CASH}} > \text{Time Loss Risk}_{\$,\text{CASH}} \quad \ldots\ldots\ldots\ldots \quad (4.26)$$

$$\text{Time Loss Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Time Loss Risk}_{\$,\text{CREDIT}} \quad \ldots\ldots\ldots\ldots \quad (4.27)$$

$$\text{Time Loss Risk}_{\$\$\$,\text{EFTPOS}} \approx \text{Time Loss Risk}_{\$,\text{EFTPOS}} \quad \ldots\ldots\ldots\ldots \quad (4.28)$$

Testing of Hypothesis One

The four hypotheses H1a, H1b, H1c and H1d are re-stated below:

H1a : Consumers have no difference in the perceived levels of risk among the five dimensions of perceived risk for cash payment.

H1b : Consumers have no difference in the perceived levels of risk among the five dimensions of perceived risk for credit card payment.

H1c : Consumers have no difference in the perceived levels of risk among the five dimensions of perceived risk for EFTPOS payment.

H1d : The relative importance of the five dimensions of perceived risk for alternative payment methods are the same.

Hypotheses H1a, H1b, H1c and H1d can be tested by applying the equations (4.1), (4.2), (4.3) and Figure 4.1 respectively. The results are as followings:

H1a: For cash payment, there are significant difference among different risk dimensions of risk except between physical risk and financial risk.

H1b: For credit card payment, there are significant difference among different risk dimensions of risk except performance risk and time loss risk.

H1c: For EFTPOS payment, there are significant difference among different risk

dimensions of risk except financial risk and performance risk.

Overall, the three payment alternatives have different level of perceived risk. Furthermore, some associations of risk dimensions do exist. For example, the dimensions of risk which are not distinguishable in each payment method is related to the characteristics of the particular methods of payment. For example, it is difficult to distinguish between the physical risk and financial risk for cash payment.

H1d: When comparing the level of risk perception for the three payment alternatives, significant difference was found between cash and EFTPOS. The order of importance of performance risk and physical risk for cash and EFTPOS are opposite to each other. On the other hand, similar profile for the importance of risk dimensions was found between EFTPOS payment and credit card payment.

Testing of Hypothesis Two

The three hypotheses H2a, H2b and H2c are re-stated below:

H2a : The level of perceived risk for cash payment shows no difference between small and large amount of purchase.

H2b : The level of perceived risk for credit card payment shows no difference between small and large amount of purchase.

H2c : The level of perceived risk for EFTPOS payment shows no difference between small and large amount of purchase.

Hypotheses H2a, H2b, and H2c can be tested by applying equations (4.6), (4.11), (4.16), (4.21) and (4.26) for cash payment; equations (4.7), (4.12), (4.17), (4.22) and (4.27) for credit card payment; and equations (4.8), (4.13), (4.18), (4.23) and (4.28) for EFTPOS payment respectively. The results are summarized below:

H2a: Physical risk, financial risk and risk of time loss for cash payment are higher when the transaction amount is larger. However, performance risk and psychological risk for cash payment show no significant difference between large and small transaction.

H2b: Performance risk for credit card payment is higher for small amount of purchase. Other dimensions of perceived risk, such as, physical risk, psychological risk, financial risk and time loss risk show no significant difference.

H2c: Performance risk for EFTPOS in small purchase is higher than that in large purchase. Psychological risk for small purchase with EFTPOS is, however,

lower than that of large purchase. Physical risk, financial risk and time loss risk of EFTPOS payment show no significant difference between large and small purchase amount.

In general, difference in level of the five dimensions of perceived risk for different amount of purchase is more significant for cash payment. The perceived risk of credit card and EFTPOS payment are not different due to amount of purchase except in the dimension of performance risk. Small purchase by credit card and EFTPOS payment have higher performance risk because such methods of payment are less acceptable to retailers.

Comparison of User and Non-user

The respondents are divided into two groups, EFTPOS user and non-user, according to their monthly usage of EPS services. There are 51 users and 116 non-users of EFTPOS in the sample. The user/non-user profile of risk perception is given in Table 4.19:

Table 4.19 EFTPOS Risk Perception of User/Non-user in Small Purchase

	User	Non-user	t-value	p-value	Sig.Diff.
Physical Risk	3.18	3.20	0.11	0.915	No
Performance Risk	4.15	4.13	-0.19	0.846	No
Psychological Risk	3.22	3.55	3.22	0.001	Yes
Financial Risk	4.36	4.14	-1.48	0.141	No
Time Loss Risk	3.79	3.54	-1.55	0.124	No

Under the small purchase situations, there is no significant difference between users' and non-users' perceived risk of EFTPOS services. The only exception is non-users' psychological risk, which is higher than that of EFTPOS payment. They consider EFTPOS to be more risky to use in small transaction. The non-users think that using EFTPOS services will affect their own image and so prefer to use other methods of payment.

The comparison of risk perception for users and non-users under large transactions is given in Table 4.20:

Table 4.20 EFTPOS Risk Perception of User/Non-user in Large Purchase

	User	Non-user	t-value	p-value	Sig.Diff.
Physical Risk	3.16	3.12	-0.27	0.790	No
Performance Risk	3.91	4.05	0.85	0.399	No
Psychological Risk	3.09	3.42	2.79	0.006	Yes
Financial Risk	4.31	4.01	-2.18	0.031	Yes
Time Loss Risk	4.01	3.55	-3.40	0.001	Yes

The risk perception of users on financial risk and time loss are higher than that of non-users. However, psychological risk of non-users remains higher than that of users. So, there is no change in the perception of psychological risk for non-users for any amount of transactions. The EFTPOS users will consider financial risk and time loss of large purchase to be higher. There is no significant difference between users and non-users in perception of physical and performance risk of EFTPOS services.

Testing of Hypothesis Three

Hypothesis three is re-stated below:

H3 : The level of perceived risk on EFTPOS payment by EFTPOS users is the same as that of non-users.

The third hypothesis is tested according to the results given in the last section. There are differences in financial risk, time loss risk and psychological risk between users and non-users group. Users group considers that financial and time risk are higher, which indicate that the null hypothesis can also be rejected. Non-users group think that psychological risk is higher for the use of EFTPOS services. However, the differences in physical risk and performance risk between the two groups are not significant. So, the experience of using EFTPOS has affected the risk perception of the users about the EFTPOS services. But instead of lowering the risk, the usage experience will increase their perception in time and financial risk.

Test on EFTPOS Knowledge

The questions on card regulations in part III of the survey are used to test the cardholders' knowledge about the use of EFTPOS services. The result is showed in Table 4.21:

Table 4.21 EFTPOS/ATM Knowledge

Questions	Right	Wrong	Uncertain
Cards are property of issuers	121	25	30
Responsible for all transactions	59	87	30
Do not give the PIN to others	145	26	5
Do not write down the PIN	134	30	12
Deposits in ATMs will be verified	101	41	34
Banks are not responsible for damages	77	37	62
Add additional service charge	69	70	37
Disclose of information to third party	36	111	29
Un-limited liability due to lost card	32	87	57
Additional charges for card replacement	106	37	33

(PIN stands for Personal Identification Number which is the password used for operating ATMs or EFTPOS terminals.)

The above results are re-grouped by counting the number of correct statements answered by each respondent and compared to the level of risk perceived by them. Respondents who can answer more than five correct answers will be considered as more knowledgable consumers, while less than or equal to five correct answers are treated as less knowledgable consumers. The comparisons of physical risk, performance risk, financial risk, psychological risk and time loss risk are given in Table 4.22, 4.23, 4.24, 4.25 and 4.26 respectively.

By inspecting the five chi-square results, all five dimensions of risk have showed no significant association between the levels of risk and the knowledge of the EFTPOS services.

Table 4.22 Relationship between EFTPOS Physical Risk and Knowledge of EFTPOS Services

Physical Risk	Knowledge	
	Low	High
Low	56	28
High	58	35

Chi-Square	Significance
0.19325	0.6602

Table 4.23 Relationship between EFTPOS Performance Risk and Knowledge of EFTPOS Services

Performance Risk	Knowledge	
	Low	High
Low	17	8
High	97	55

Chi-Square	Significance
0.03223	0.8575

Table 4.24 Relationship between EFTPOS Financial Risk and Knowledge of EFTPOS Services

Financial Risk	Knowledge	
	Low	High
Low	8	4
High	104	59

Chi-Square	Significance
0.00000	1.0000

Table 4.25 Relationship between EFTPOS Psychological Risk and Knowledge of EFTPOS Services

Psychological Risk	Knowledge	
	Low	High
Low	23	17
High	91	46

Chi-Square	Significance
0.72136	0.3957

Table 4.26 Relationship between EFTPOS Time Loss Risk and Knowledge of EFTPOS Services

Time Loss	Knowledge	
	Low	High
Low	24	19
High	68	42

Chi-Square	Significance
1.59182	0.2071

Testing of Hypothesis Four

Hypothesis four is re-stated below:

H4 : The level of perceived risk on EFTPOS payment by more knowledgable consumers is the same as that of less knowledgable consumers.

The hypothesis, H4, cannot be rejected with the results of the survey. No significant association between levels of knowledge and levels of perceived risk was found. So, the knowledge and information about the EFTPOS services may not help to reduce the risk perceived by the consumers. However, one point is noted: the

consumers rarely notice that their personal privacy may be affected by the disclosure of the personal data held by the EFTPOS system. There has yet no legal regulation to deal with such issues and the consumers are not aware of it, too.

Chapter Summary

The results of the survey are summarized in this chapter. The four hypotheses were tested accordingly. The implication and explanation of the test results were also given in each sections. The major findings were (1) different methods of payment had different levels of perceived risk for the five dimensions of risk; (2) the purchase amount had very small effect on level of perceived risk except cash payment which has higher physical risk; (3) there was little difference in level of risk perception between EFTPOS users and non-users and; (4) The knowledge on EFTPOS service did not affect the levels of perceived risk.

CHAPTER V

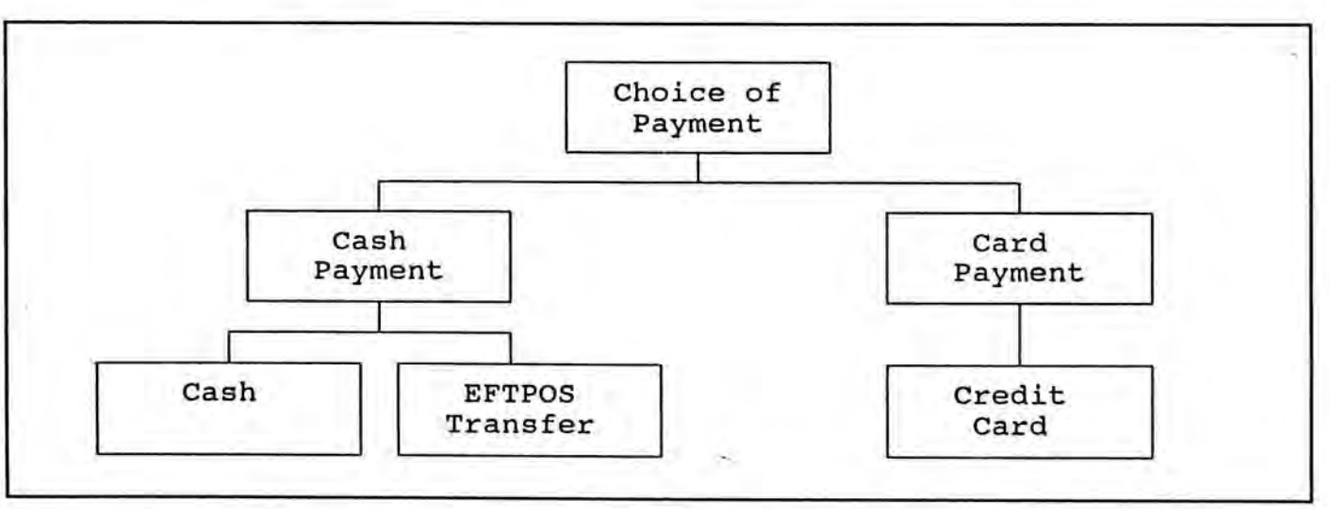
SUMMARY AND CONCLUSION

The major findings and contributions for this study are reviewed in this chapter. The implications for the findings are developed. Limitations of the study and suggestions for further researches are stated.

Summary of Key Findings

Electronic payment by EFTPOS transfer (commonly known as EPS in Hong Kong) is originally targeted to be a replacement of the paper-based payments, such as cash. The planned positioning of EFTPOS is showed in Figure 5.1

Figure 5.1 Positioning of EFTPOS Payments



However, the results of this research reviews that consumers do not view the EFTPOS as an alternative payment method of cash payment in terms of the perceived risk involved. The physical risk and performance risk are significantly different for EFTPOS and cash payment. EFTPOS has very low physical risk and very high performance risk. The risk profile of EFTPOS is similar to that of credit card. In fact, consumers view the EFTPOS as an alternative to credit card but not cash.

The second finding is that the amounts of purchase has some effects on the level of perceived risk according to the type of payment method involved. Similar variations due to difference in purchase amount for performance risk for EFTPOS and credit card further confirm the idea that consumers view these two methods of payment as close substitute for each other. Physical risk for cash payment is statistically higher in large dollar purchase. Therefore, promotion programmes for EFTPOS can capitalize on this point and advertise that EFTPOS has no danger of loss and robbery.

When comparing the risk profiles for EFTPOS users and non-users, no statistically significant difference was found except the dimension of psychological risk. Non-users consider the use of EFTPOS service will affect their image and status. This may be one of the reasons why they do not use EFTPOS payment. Cash is more convenient. Prior experience with EFTPOS service does not help to reduce the level of perceived risk. Instead, it increases the perceived risk of time loss and financial loss.

The test on the association between EFTPOS knowledge and levels of perceived risk yields no significant difference. No association between knowledge on EFTPOS and the levels of perceived risk was found. However, one point is notable. The problem of personal privacy is not commonly recognized among the respondents. Most of them are not sure that their personal data may be disclosed to third party while disclosure policy is solely determined by the card issuers. Also, the liability due to unauthorized use of the EFTPOS transfer is not known among the respondents.

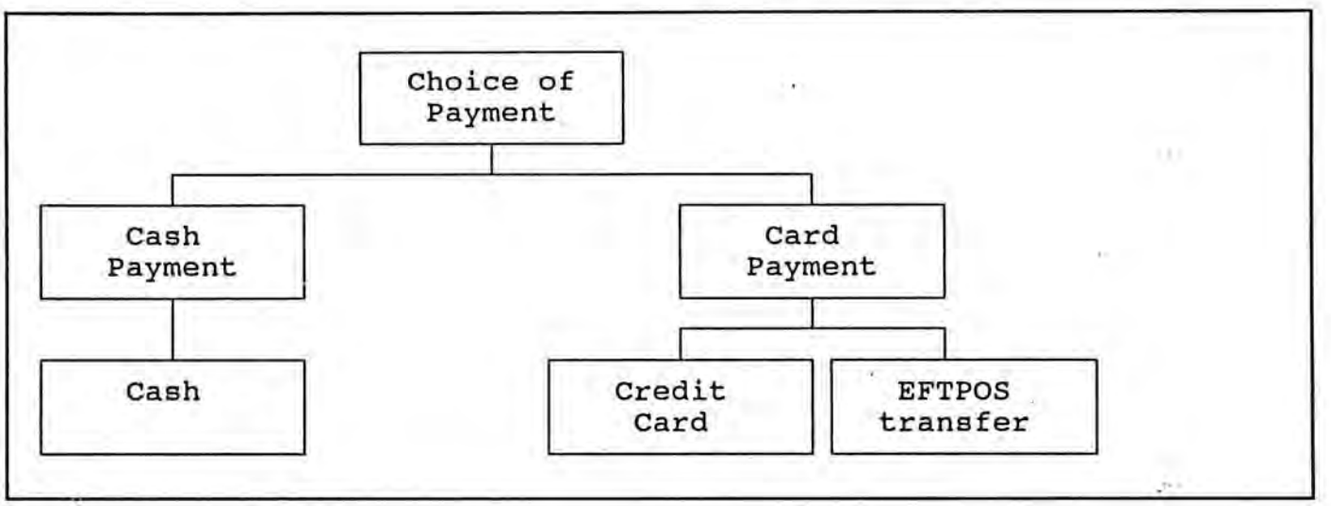
Implications and Discussion

The perceived risk profile for EFTPOS is similar to that for credit card. The differentiation between credit cards and EFTPOS services is low among consumers. However, credit card has a major advantage over EFTPOS in that credit card users can put their purchase on credit. This means they can borrow from the card issuers free of interest for certain period of time. EFTPOS does not provide similar service. Every dollar pay by EFTPOS is directly debited from the consumers' bank accounts at the time of purchase is made. This puts EFTPOS in an unfavourable position.

Cash payment is perceived to be more convenient and the consumers prefer to use cash because the risk of un-acceptance (performance risk) is relatively low. However, the potential of physical loss and robbery for cash is high. On the contrary, both EFTPOS and credit card process lower physical risk and higher performance risk. In practice, the consumers will choose between two different sets

of payment method: one is cash and another one is card payments which included credit card and EFTPOS. The situation is graphed in Figure 5.2:

Figure 5.2 Consumers' Choice of Payment Alternatives



After the consumers have made a purchased, they must choose to pay by either cash or card. If they choose to use cash, they can complete the transaction in a short period of time. However, if they choose to use card payment, they will have to decide between credit card and EFTPOS. Credit card payments can provide credit and they do not have to pay at once. This creates the image that credit card can delay actual payment. So, consumers will be more likely to use credit card instead of EFTPOS. EFTPOS becomes the second choice for card payment which is not so convenient as cash and does not provide advantage of later payment.

The comparative strength of EFTPOS is its lower physical risk. The major weaknesses of EFTPOS lie in its higher performance risk as compared to cash and higher financial risk with respect to credit card. The psychological risk is low and the risk of time loss does not differ much among the three payment methods under study.

The lower physical risk for EFTPOS is a positive factor for encouraging consumers to adopt the services. Yet, the higher performance risk work against it. Consumers will prefer to use cash because they consider that cash has universal acceptance at all purchase situations. So, improvement of coverage of EFTPOS terminals are required.

In order to lower the performance risk of EFTPOS services, extensive installation of low cost terminals are required. Promotion of the EFTPOS services should concentrate on the fact that the risk of robbery, i.e. physical risk is low. More emphasis should be placed on the comparison between cash and EPS services. The association of cash payments and EFTPOS transfers should be established with an emphasis on EFTPOS service as an alternative form of cash payment. The EFTPOS has to create its own identity as a low risk, high performance medium of exchange.

The Case of Super Ease Card

The Hongkong Bank has taken an initial step to increase the number of EFTPOS outlets. She has recently introduced the Super Ease Card which, in the simplest term, is a debit card with standby credit facilities. The Super Ease Card is basically a EFT card with off-line transaction ability at all Visa credit card counters. Payments by the Card is entered without direct connection to the EPS network. Transactions will be debited from the consumers' bank accounts in the next business day after the transaction slips is routed to credit card company. The credit card

company will enter the transaction amount into the EPS network and debit the corresponding accounts.

The Super Ease Card is an attempt to increase the coverage of EPS terminals by re-introducing some of the manual processing step into the automated EFTPOS transfer process. This will temporarily solve the low terminal density problem but the full benefits of electronic payment at point of sale cannot be realized.

Limitation of Study

The questionnaire uses one positive question and one negative question to test the respondents' attitude towards a particular dimension of perceived risk. Although the positive and negative questions are placed as far away from each other as possible, they may confuse the respondents about the real dimension of risk to be tested. The validity of each question is only tested by pre-testing (total sample of 12), which may not represent the true dimension of risk to be tested.

Contribution of Study

This study borrows the perceived risk model from consumer behaviour area and uses it as an evaluation method of new electronic banking services. It will provide insights for the marketers of innovative electronic banking services. The bank marketers should view the introduction of electronic banking service as an introduction of any new service into the market place. The case of EFTPOS does not

match their assumption of using EFTPOS as a replacement of cash payment. This signifies that more marketing researches and consumer participation in designing and introducing new banking services are required. The success of new electronic banking service is not only the problem of technology feasibility, but also the problem of marketing and promotion efforts.

Suggestions for Further Study

The test on association of knowledge and level of perceived risk does not yield any useful conclusion. Therefore, further studies on the level of perceived risk and knowledge can be employed by using other techniques, such as in-depth interview or focus group technique. Furthermore, this study only focuses on the present risk perception of the consumers but has not touched upon the area of relieving the level of risk by risk reduction techniques, such as endorsements (change of psychological risk), money-back guarantee (change of financial risk) and free demonstration and trial (change of time loss risk). This may form another subject of study.

Concluding Summary

This chapter concludes the whole study on perceived risk of EFTPOS services. The basic finding is that:

(1) EFTPOS is perceived to be an alternative to credit card but not an alternative of cash payment because consumers view EFTPOS to be similar to credit card but very different from cash in the area of physical risk and performance risk.

(2) The amounts of purchase have little effect on the level of perceived risk. Therefore, the purchase amount may not affect the consumers' choice of payment method.

(3) The difference in the levels of perceived risk between EFTPOS users and non-users is not significant.

(4) There is no significant association between level of knowledge on EFTPOS services and the level of perceived risk.

APPENDIX

Sample of Questionnaire

I am a MBA student from the Chinese University of Hong Kong now undertaking a survey on how Hong Kong people are using electronic banking services. I would like to have your co-operation in answering the following questions. The information collected will only be used for research purpose. **All collected information will be treated with strict confidentiality.** Please circle the answer that you think best describe your perceptions and attitude.

Definition of Terms Used:

EPS *stands for Easy Pay System in which you can directly transfer money from your bank account to a retailer's account to pay for your bill by electronic means.*

ETC/ATM *stands for Electronic Teller Card/Automatic Teller Machine in which you can withdraw/transfer money from your bank account.*

Part I

1. How many ETC/ATM cards do you carry? _____
2. How many credit cards do you carry? _____
3. On average, how much cash do you carry for daily use?
   - [1] below $100
   - [2] $101 - $150
   - [3] $151 - $300
   - [4] $301 - $500
   - [5] $501 - $1,000
   - [6] $1,001 - $1,500
   - [7] above $1,500

4. On average, how much do you spend for daily use?
   - [1] below $100
   - [2] $101 - $150
   - [3] $151 - $300
   - [4] $301 - $500
   - [5] $501 - $1,000
   - [6] $1,001 - $1,500
   - [7] above $1,500

5. Suppose, if you do not carry any ETC/ATM card, how much cash you will carry for daily use?
   - [1] below $100
   - [2] $101 - $150
   - [3] $151 - $300
   - [4] $301 - $500
   - [5] $501 - $1,000
   - [6] $1,001 - $1,500
   - [7] above $1,500

6. What is your average amount of cash withdrawn from ETC/ATM machine? _____
7. What is your average amount of cash withdrawn from bank tellers by going to the bank offices ? _____
8. On average, how many time do you use ETC/ATM services in a month? _____
9. On average, how many time do you use EPS services in a month? _____
10. On average, how many time do you go to bank office in a month? _____

Part II

Instructions:
When you are evaluating the statements in the next three pages, please use the scale below to indicate your agreement or disagreement with each statement:

[1] strongly disagree
[2] somewhat disagree
[3] slightly disagree
[4] slightly agree
[5] somewhat agree
[6] strongly agree

When answering questions in the next three sections, please imagine that you are buying clothing (priced around $300) in a department store.

Section A: When you use CASH to purchase the clothing (≈ $300), to what extent do you agree with each of the following statements about using cash?

		Strongly agree					Strongly disagree
11.	Cash is not likely to be lost/stolen	[6]	[5]	[4]	[3]	[2]	[1]
12.	Cash payment is welcomed every where	[6]	[5]	[4]	[3]	[2]	[1]
13.	It is difficult to get refund	[6]	[5]	[4]	[3]	[2]	[1]
14.	It is a symbol of success	[6]	[5]	[4]	[3]	[2]	[1]
15.	You will use more time to pay your bill	[6]	[5]	[4]	[3]	[2]	[1]
16.	You may be robbed if you carry much cash	[6]	[5]	[4]	[3]	[2]	[1]
17.	Some shops may not accept cash	[6]	[5]	[4]	[3]	[2]	[1]
18.	It is easy to stop payment	[6]	[5]	[4]	[3]	[2]	[1]
19.	Using cash have a lower status symbol	[6]	[5]	[4]	[3]	[2]	[1]
20.	You can have more time to do shopping	[6]	[5]	[4]	[3]	[2]	[1]

Section B: When you use CREDIT CARD to purchase the clothing (≈ $300), to what extent do you agree with each of the following statements about using credit card?

		Strongly agree					Strongly disagree
21.	Credit card is not likely to be lost/stolen	[6]	[5]	[4]	[3]	[2]	[1]
22.	Credit card is welcomed every where	[6]	[5]	[4]	[3]	[2]	[1]
23.	It is difficult to get refund	[6]	[5]	[4]	[3]	[2]	[1]
24.	It is a symbol of success	[6]	[5]	[4]	[3]	[2]	[1]
25.	You will use more time to pay your bill	[6]	[5]	[4]	[3]	[2]	[1]
26.	You may be robbed if you carry many credit cards	[6]	[5]	[4]	[3]	[2]	[1]
27.	Some shops may not accept credit card	[6]	[5]	[4]	[3]	[2]	[1]
28.	It is easy to stop payment	[6]	[5]	[4]	[3]	[2]	[1]
29.	Using credit card have a lower status symbol	[6]	[5]	[4]	[3]	[2]	[1]
30.	You can have more time to do shopping	[6]	[5]	[4]	[3]	[2]	[1]

Section C: When you use EPS (electronic transfer with ETC/ATM card) to purchase the clothing (≈ $300), to what extent do you agree with each of the following statements about using EPS services?

		Strongly agree					Strongly disagree
31.	ETC/ATM card is not likely to be lost/stolen	[6]	[5]	[4]	[3]	[2]	[1]
32.	EPS payment is welcomed every where	[6]	[5]	[4]	[3]	[2]	[1]
33.	It is difficult to get refund	[6]	[5]	[4]	[3]	[2]	[1]
34.	It is a symbol of success	[6]	[5]	[4]	[3]	[2]	[1]
35.	You will use more time to pay your bill	[6]	[5]	[4]	[3]	[2]	[1]
36.	You may be robbed if you carry many ETC/ATM cards	[6]	[5]	[4]	[3]	[2]	[1]
37.	Some shops may not accept EPS	[6]	[5]	[4]	[3]	[2]	[1]
38.	It is easy to stop payment	[6]	[5]	[4]	[3]	[2]	[1]
39.	Using EPS have a lower status symbol	[6]	[5]	[4]	[3]	[2]	[1]
40.	You can have more time to do shopping	[6]	[5]	[4]	[3]	[2]	[1]

When answering questions in the next three sections, please imagine that you are buying a television set (priced around $3,000) in a department store.

Section A: When you use CASH to purchase the TV set (≈ $3,000), to what extent do you agree with each of the following statements about using cash?

		Strongly agree					Strongly disagree
41.	Cash is not likely to be lost/stolen	[6]	[5]	[4]	[3]	[2]	[1]
42.	Cash payment is welcomed every where	[6]	[5]	[4]	[3]	[2]	[1]
43.	It is difficult to get refund	[6]	[5]	[4]	[3]	[2]	[1]
44.	It is a symbol of success	[6]	[5]	[4]	[3]	[2]	[1]
45.	You will use more time to pay your bill	[6]	[5]	[4]	[3]	[2]	[1]
46.	You may be robbed if you carry much cash	[6]	[5]	[4]	[3]	[2]	[1]
47.	Some shops may not accept cash	[6]	[5]	[4]	[3]	[2]	[1]
48.	It is easy to stop payment	[6]	[5]	[4]	[3]	[2]	[1]
49.	Using cash have a lower status symbol	[6]	[5]	[4]	[3]	[2]	[1]
50.	You can have more time to do shopping	[6]	[5]	[4]	[3]	[2]	[1]

Section B: When you use CREDIT CARD to purchase the TV set (≈ $3,000), to what extent do you agree with each of the following statements about using credit card?

		Strongly agree					Strongly disagree
51.	Credit card is not likely to be lost/stolen	[6]	[5]	[4]	[3]	[2]	[1]
52.	Credit card is welcomed every where	[6]	[5]	[4]	[3]	[2]	[1]
53.	It is difficult to get refund	[6]	[5]	[4]	[3]	[2]	[1]
54.	It is a symbol of success	[6]	[5]	[4]	[3]	[2]	[1]
55.	You will use more time to pay your bill	[6]	[5]	[4]	[3]	[2]	[1]
56.	You may be robbed if you carry many credit cards	[6]	[5]	[4]	[3]	[2]	[1]
57.	Some shops may not accept credit card	[6]	[5]	[4]	[3]	[2]	[1]
58.	It is easy to stop payment	[6]	[5]	[4]	[3]	[2]	[1]
59.	Using credit card have a lower status symbol	[6]	[5]	[4]	[3]	[2]	[1]
60.	You can have more time to do shopping	[6]	[5]	[4]	[3]	[2]	[1]

Section C: When you use EPS (electronic transfer with ETC/ATM card) to purchase the TV set (≈ $3,000), to what extent do you agree with each of the following statements about using EPS services?

		Strongly agree					Strongly disagree
61.	ETC/ATM card is not likely to be lost/stolen	[6]	[5]	[4]	[3]	[2]	[1]
62.	EPS payment is welcomed every where	[6]	[5]	[4]	[3]	[2]	[1]
63.	It is difficult to get refund	[6]	[5]	[4]	[3]	[2]	[1]
64.	It is a symbol of success	[6]	[5]	[4]	[3]	[2]	[1]
65.	You will use more time to pay your bill	[6]	[5]	[4]	[3]	[2]	[1]
66.	You may be robbed if you carry many ETC/ATM cards	[6]	[5]	[4]	[3]	[2]	[1]
67.	Some shops may not accept EPS	[6]	[5]	[4]	[3]	[2]	[1]
68.	It is easy to stop payment	[6]	[5]	[4]	[3]	[2]	[1]
69.	Using EPS have a lower status symbol	[6]	[5]	[4]	[3]	[2]	[1]
70.	You can have more time to do shopping	[6]	[5]	[4]	[3]	[2]	[1]

PART III

71. Do you read the regulations (terms and conditions governing the use of card) when you apply for ETC/ATM services?

[1] Yes.
[2] No. Reason: _____

72. If you have read the card regulations, how do you read it? (Please state your manner on the following scale)

Very Briefly	Briefly	Read at Usual speed	Carefully	Very Carefully

For the following questions, please use the scale below to indicate your knowledge about the use of ETC/ATM cards?

[1] Not sure. The statement may be right or wrong.
[2] False. The statement is wrong.
[3] True. The statement is right.

		True	False	Not sure
73.	The cards are property of the banks/issuers, they can withdraw the cards in any time.	[3]	[2]	[1]
74.	You are responsible for all card transactions whether authorized by you or not.	[3]	[2]	[1]
75.	You can show your card password to others and tell them to use your card.	[3]	[2]	[1]
76.	You are required not to write down your password on any paper or record.	[3]	[2]	[1]
77.	Your cash deposit with the ATM will only be deposited to your account after verification by the banks.	[3]	[2]	[1]
78.	The banks/issuers are liable for damages if they cannot provide ETC/ATM services.	[3]	[2]	[1]
79.	The banks/issuers can add additional service charges for using the ETC/ATM services.	[3]	[2]	[1]
80.	No other parties will have access to your account information.	[3]	[2]	[1]
81.	Your maximum money loss due to stolen/lost ETC/ATM card is un-limited under some circumstance.	[3]	[2]	[1]
82.	There is additional charges for replacement of lost cards.	[3]	[2]	[1]

PART IV

83. Sex
[1] Male [2] Female

84. Age _____

85. Marital Status
[1] Single [2] Married [3] Separated

86. Education
[1] Primary school or below
[2] Secondary school
[3] Matriculation
[4] Polytechnic/technical institute
[5] Degree programme/university or above

87. What is your own annual income?
[1] HK$50,000 or below
[2] HK$50,001 - $100,000
[3] HK$100,001 - $150,000
[4] HK$150,001 - $200,000
[5] HK$200,001 - $250,000
[6] HK$250,001 or above

88. In what type of business, industry or service are you engaged?
[1] Banking/finance/accountancy/insurance/real estate
[2] Manufacturing
[3] Wholesale/retail trading
[4] Transportation/utilities/communication
[5] Import/export
[6] Education/academic/research
[7] Architecture/engineering/construction
[8] Legal
[9] Medical/dental/other related professions
[10] Government
[11] Others

89. What is your position held?
[1] Clerk, white collar
[2] Worker, blue collar
[3] Professional (e.g. accountant, solicitor etc)
[4] Technical (e.g. engineer, programmer etc)
[5] Middle management
[6] Senior management
[7] House wife
[8] Others, please specify _____

Figure A.1 Sex Distribution of Survey Respondents

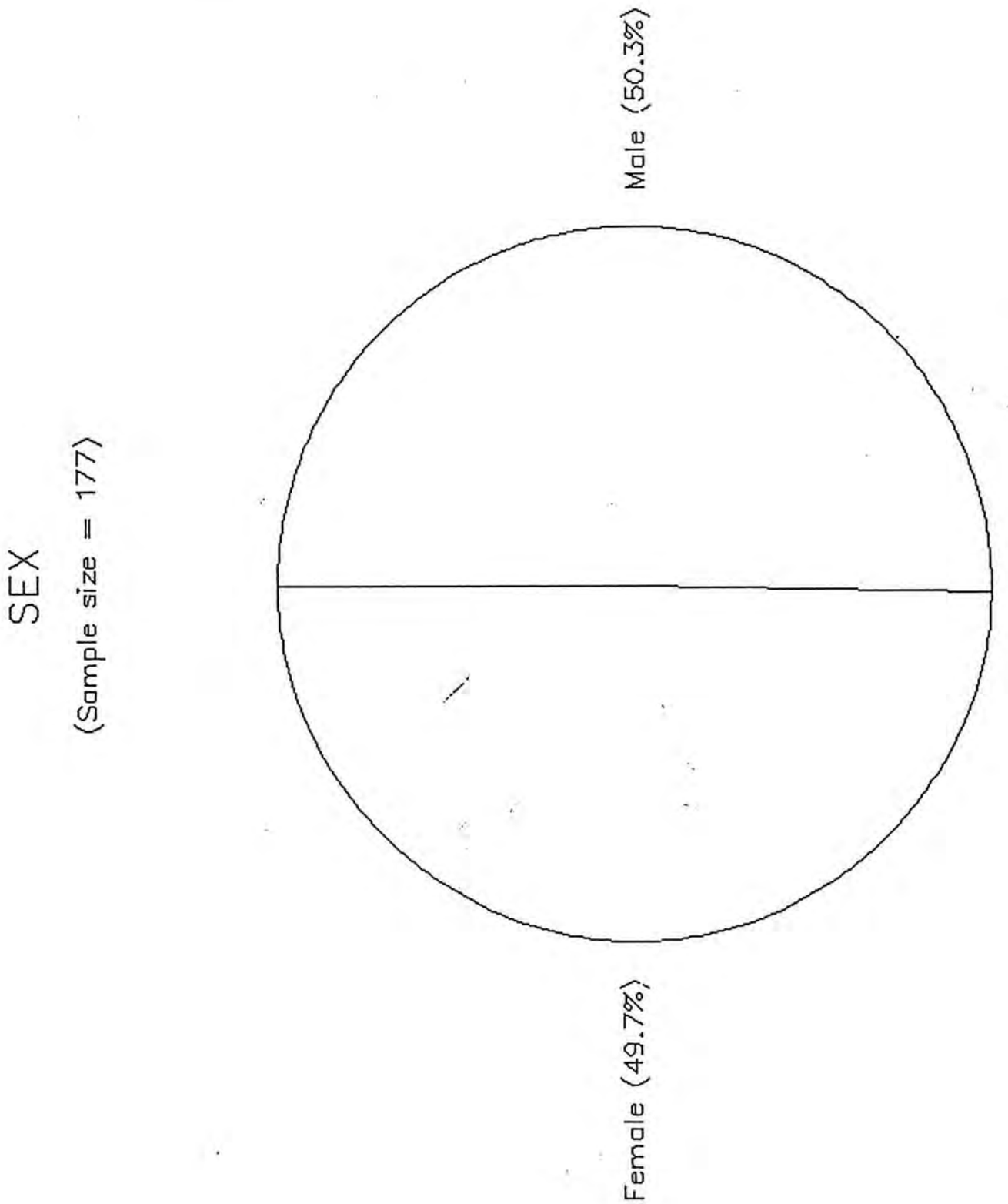


Figure A.2 Age Distribution of Survey Respondents

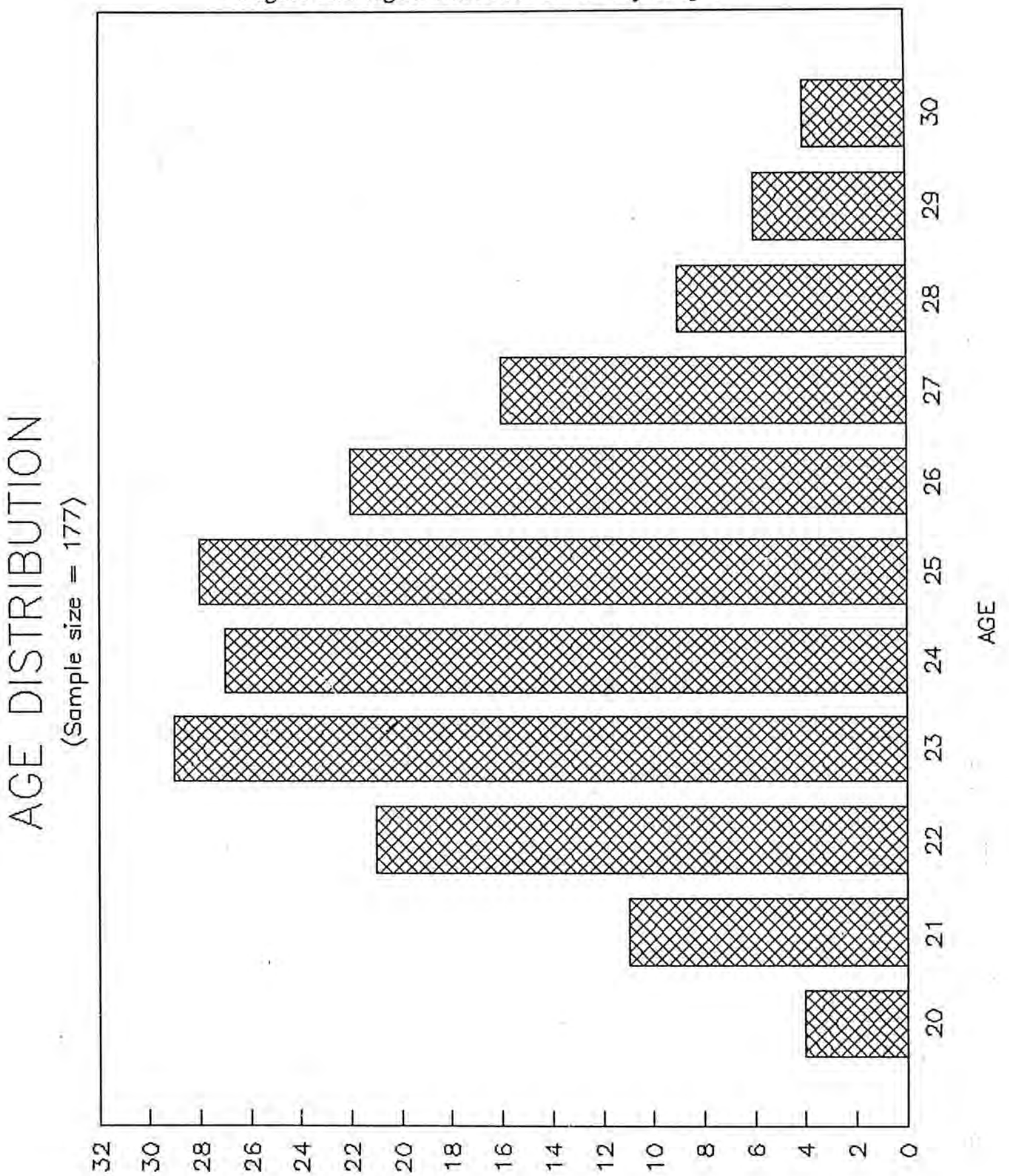


Figure A.3 Income Distribution of Survey Respondents

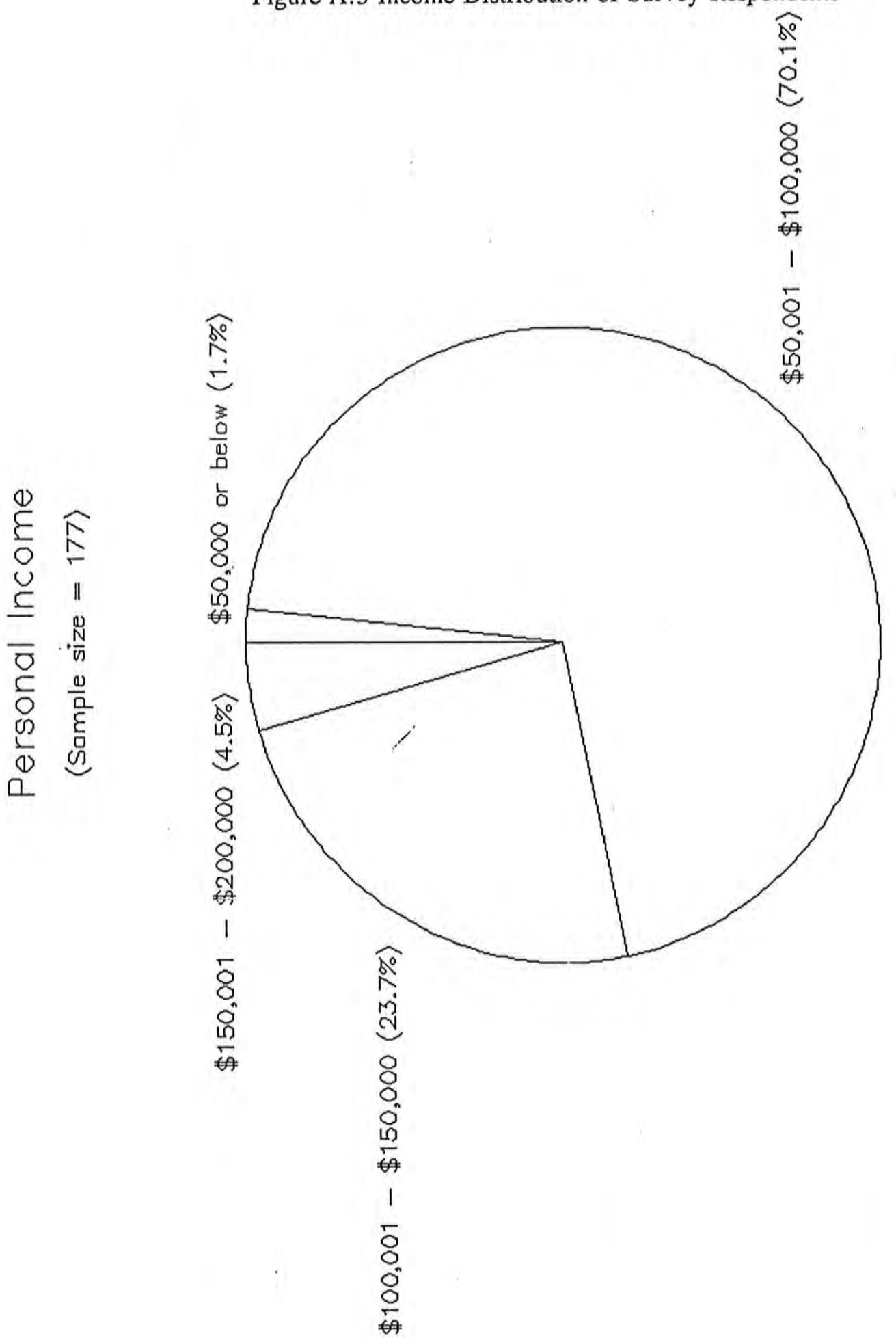


Figure A.4 Martial Status of Survey Respondents

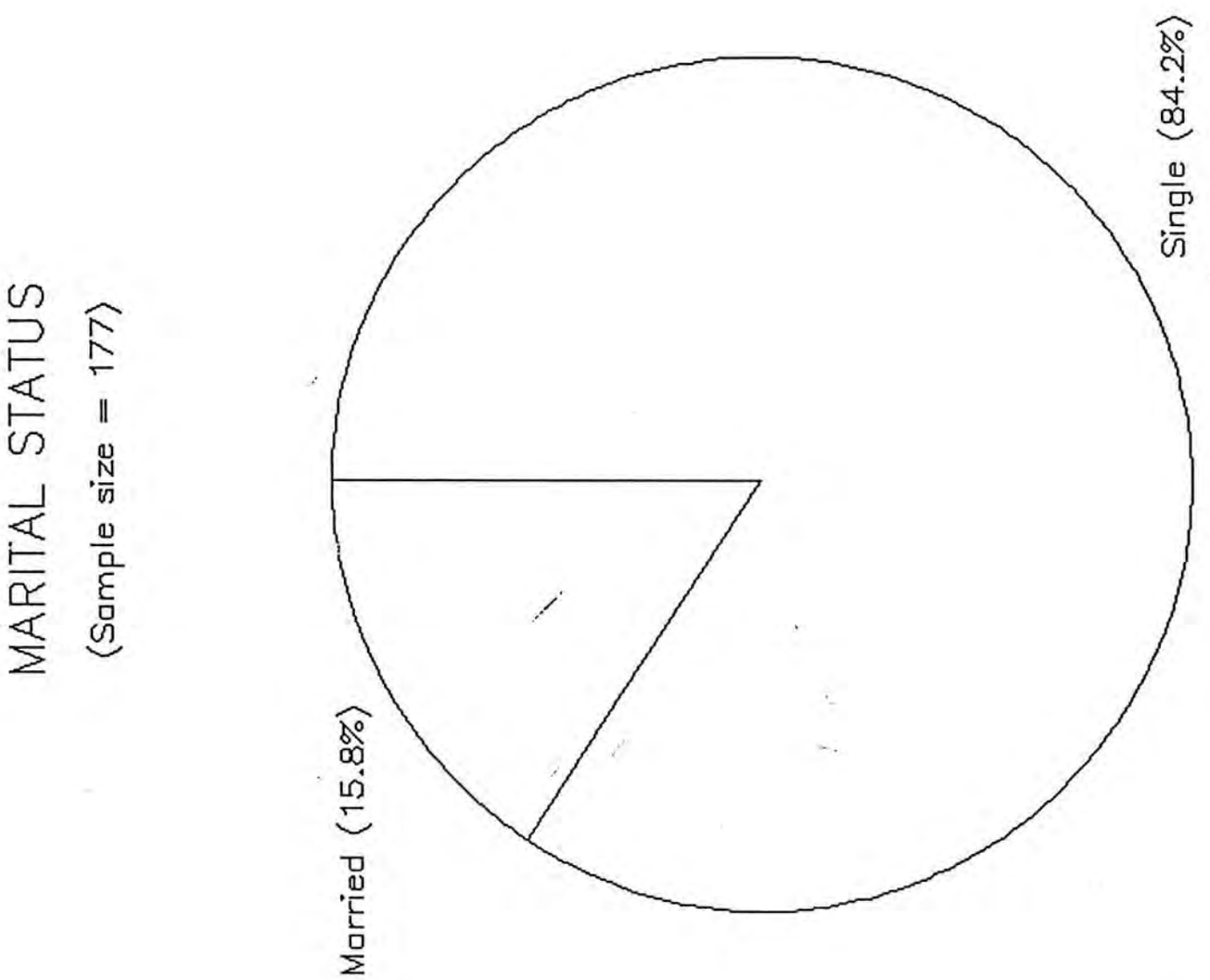


Figure A.5 Education Level of Survey Respondents

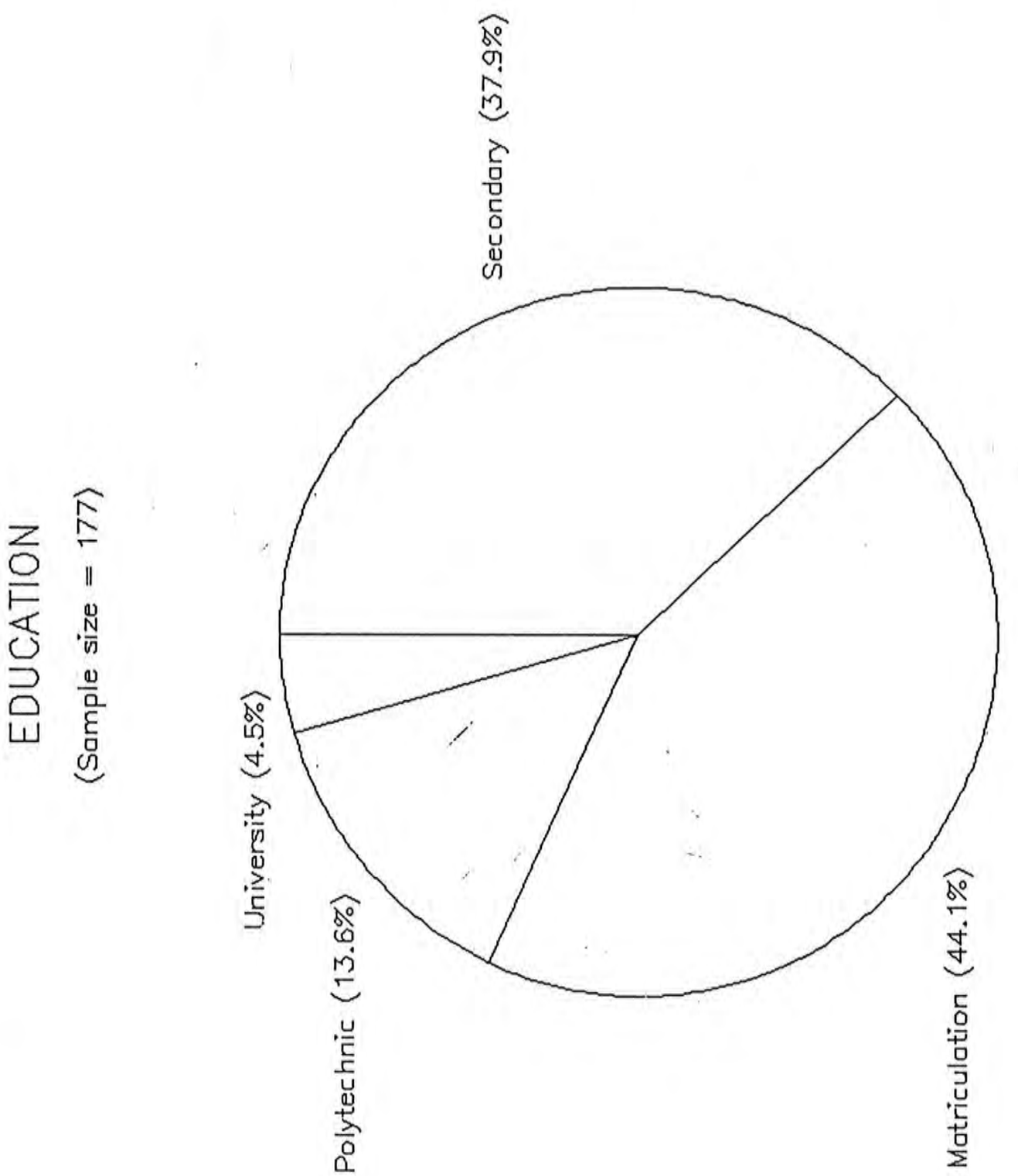


Figure A.6 Job Distribution of Survey Respondents

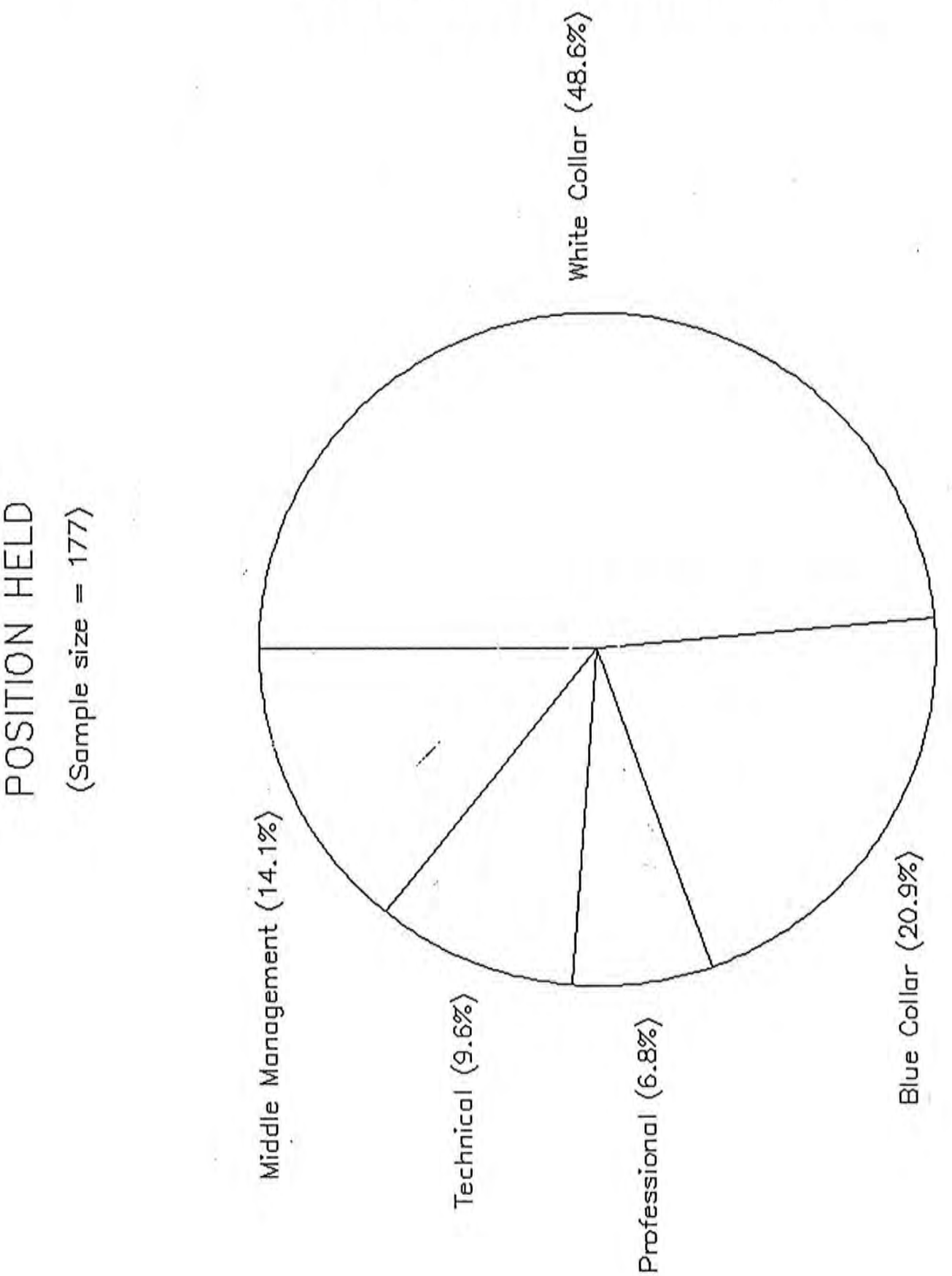


Figure A.7 Type of Business Involved of Survey Respondents

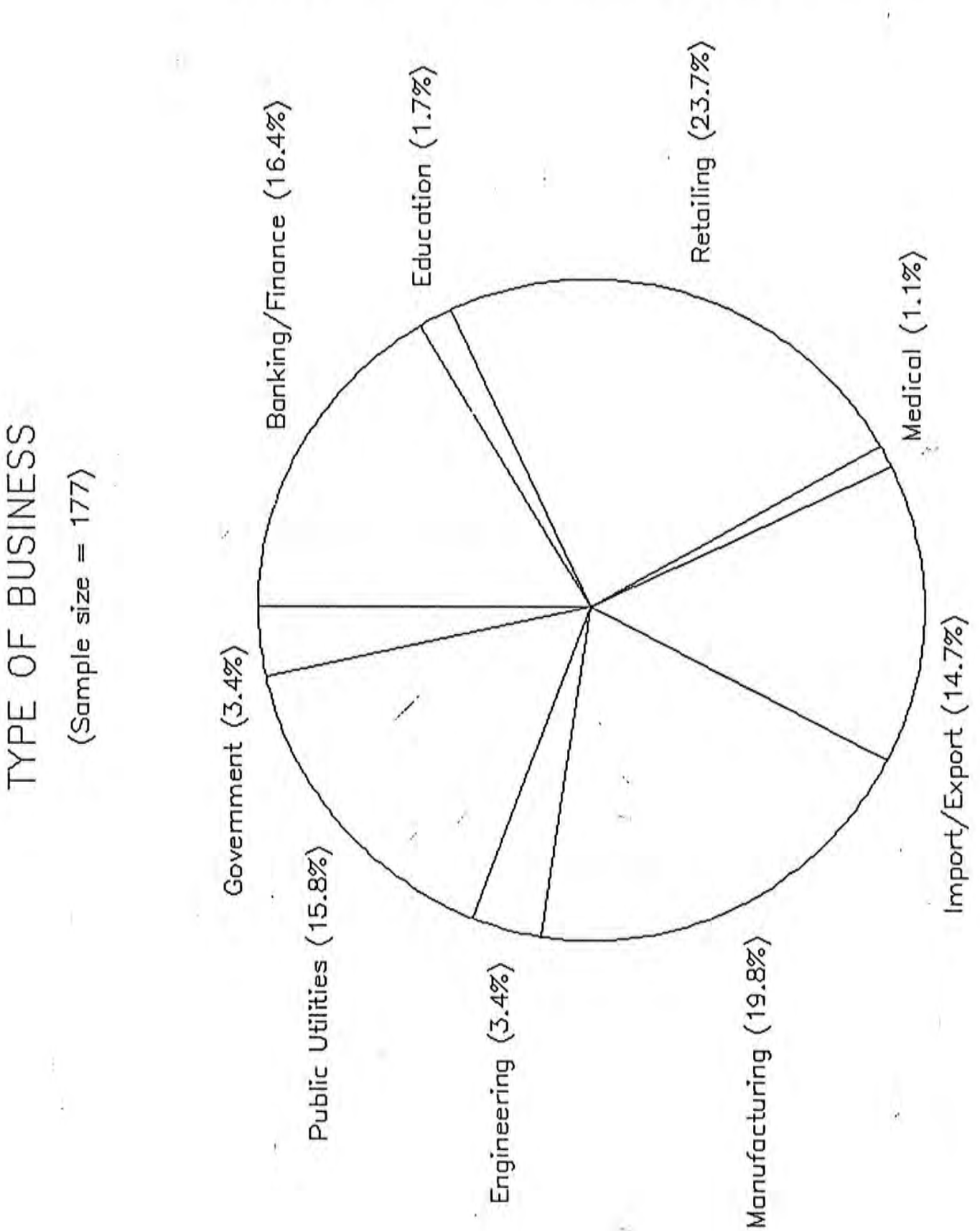


Figure A.8 EPS User and Non-User Distribution

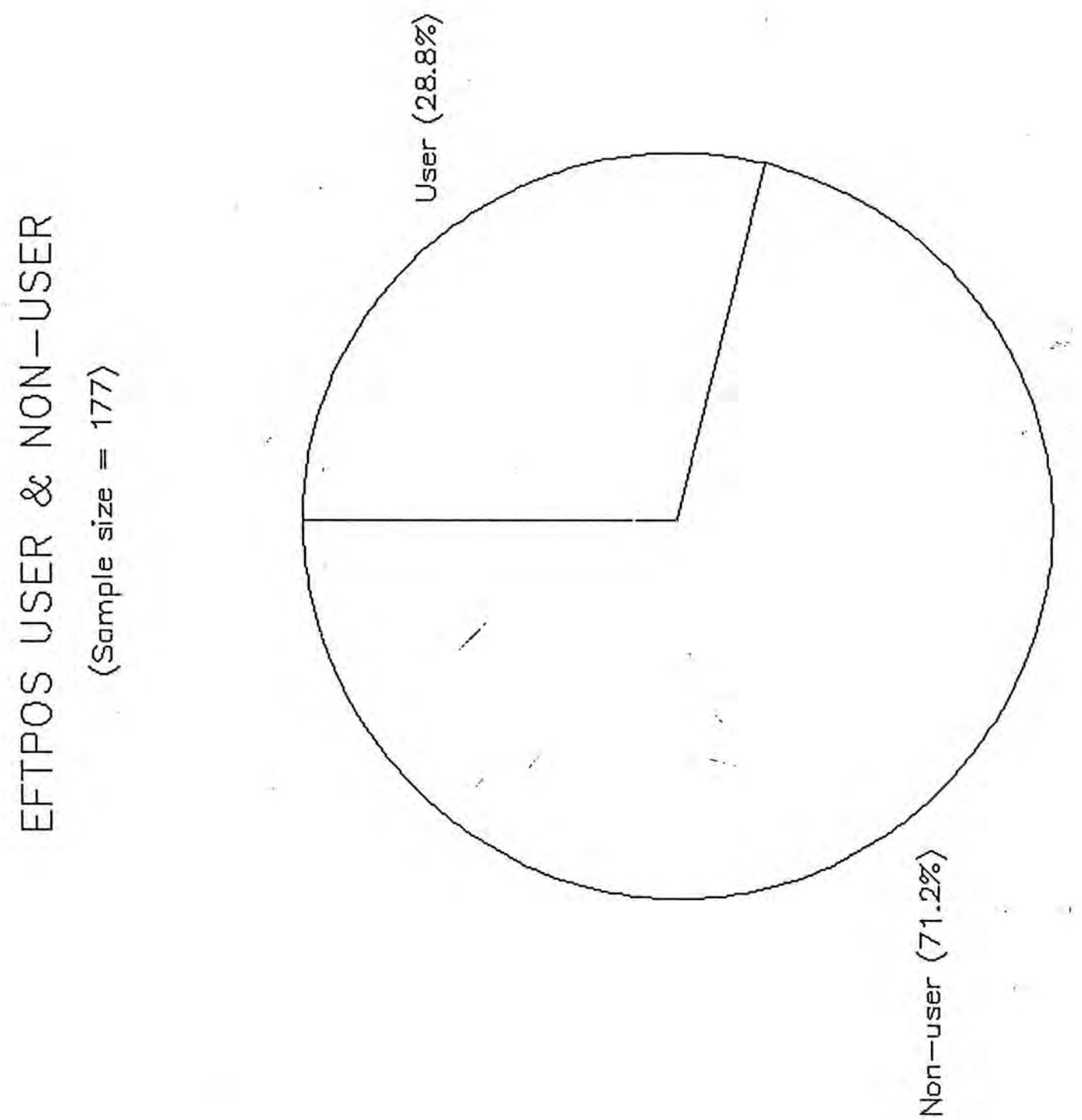


Table A.1 Summary of Perceived Risk Scores

Purchase Amount	Payment Method	Perceived Risk	Mean	S.D.
Small	Cash Payment	Physical	4.136	1.029
		Performance	1.924	0.969
		Financial	4.206	1.135
		Psychological	3.246	0.833
		Time Loss Risk	3.287	0.806
	Credit Card	Physical	3.189	0.959
		Performance	4.096	0.891
		Financial	3.548	0.946
		Psychological	2.819	0.760
		Time Loss Risk	3.940	0.920
	EFTPOS Transfer	Physical	3.198	0.906
		Performance	4.138	0.966
		Financial	4.209	0.883
		Psychological	3.460	0.694
		Time Loss Risk	3.616	0.924
Large	Cash Payment	Physical	4.557	0.912
		Performance	2.060	0.995
		Financial	4.412	0.988
		Psychological	3.141	0.744
		Time Loss Risk	3.446	0.919
	Credit Card	Physical	3.201	1.003
		Performance	3.847	1.032
		Financial	3.588	1.048
		Psychological	2.847	0.822
		Time Loss Risk	3.963	0.894
	EFTPOS Transfer	Physical	3.136	0.983
		Performance	4.014	1.023
		Financial	4.097	0.852
		Psychological	3.333	0.728
		Time Loss Risk	3.684	0.828

Table A.2 Distribution of Debit Card and Credit Card among Respondents

Credit Card / Debit Card	0	1	2	3	4	5
0		1		1		
1	31	46	12	2		
2	17	31	14	1		
3	7	3	2		1	1
4		4		1		
5		1				
6						1

Lists of Perceived Risk Equation

$\text{Physical Risk}_{\text{CASH}} \approx \text{Financial Risk}_{\text{CASH}} > \text{Time Loss Risk}_{\text{CASH}} > \text{Psychological Risk}_{\text{CASH}} > \text{Performance Risk}_{\text{CASH}}$

$\text{Performance Risk}_{\text{CREDIT}} \approx \text{Time Loss Risk}_{\text{CREDIT}} > \text{Financial Risk}_{\text{CREDIT}} > \text{Physical Risk}_{\text{CREDIT}} > \text{Psychological Risk}_{\text{CREDIT}}$

$\text{Financial Risk}_{\text{EFTPOS}} \approx \text{Performance Risk}_{\text{EFTPOS}} > \text{Time Loss Risk}_{\text{EFTPOS}} > \text{Psychological Risk}_{\text{EFTPOS}} > \text{Physical Risk}_{\text{EFTPOS}}$

$\text{Physical Risk}_{\$,\text{CASH}} > \text{Physical Risk}_{\$,\text{CREDIT}} \approx \text{Physical Risk}_{\$,\text{EFTPOS}}$

$\text{Physical Risk}_{\$\$\$,\text{CASH}} > \text{Physical Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Physical Risk}_{\$\$\$,\text{EFTPOS}}$

$\text{Physical Risk}_{\$\$\$,\text{CASH}} > \text{Physical Risk}_{\$,\text{CASH}}$

$\text{Physical Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Physical Risk}_{\$,\text{CREDIT}}$

$\text{Physical Risk}_{\$\$\$,\text{EFTPOS}} \approx \text{Physical Risk}_{\$,\text{EFTPOS}}$

$\text{Performance Risk}_{\$,\text{EFTPOS}} \approx \text{Performance Risk}_{\$,\text{CREDIT}} > \text{Performance Risk}_{\$,\text{CASH}}$

$\text{Performance Risk}_{\$\$\$,\text{EFTPOS}} > \text{Performance Risk}_{\$\$\$,\text{CREDIT}} > \text{Performance Risk}_{\$\$\$,\text{CASH}}$

$\text{Performance Risk}_{\$\$\$,\text{CASH}} \approx \text{Performance Risk}_{\$,\text{CASH}}$

$\text{Performance Risk}_{\$,\text{CREDIT}} > \text{Performance Risk}_{\$\$\$,\text{CREDIT}}$

$\text{Performance Risk}_{\$,\text{EFTPOS}} > \text{Performance Risk}_{\$\$\$,\text{EFTPOS}}$

$\text{Psychological Risk}_{\$,\text{EFTPOS}} > \text{Psychological Risk}_{\$,\text{CASH}} > \text{Psychological Risk}_{\$,\text{CREDIT}}$

$\text{Psychological Risk}_{\$\$\$,\text{EFTPOS}} > \text{Psychological Risk}_{\$\$\$,\text{CASH}} > \text{Psychological Risk}_{\$\$\$,\text{CREDIT}}$

$\text{Psychological Risk}_{\$\$\$,\text{CASH}} \approx \text{Psychological Risk}_{\$,\text{CASH}}$

$\text{Psychological Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Psychological Risk}_{\$,\text{CREDIT}}$

$\text{Psychological Risk}_{\$,\text{EFTPOS}} > \text{Psychological Risk}_{\$\$\$,\text{EFTPOS}}$

$\text{Financial Risk}_{\$,\text{CASH}} \approx \text{Financial Risk}_{\$,\text{EFTPOS}} > \text{Financial Risk}_{\$,\text{CREDIT}}$

$\text{Financial Risk}_{\$\$\$,\text{CASH}} > \text{Financial Risk}_{\$\$\$,\text{EFTPOS}} > \text{Financial Risk}_{\$\$\$,\text{CREDIT}}$

$\text{Financial Risk}_{\$\$\$,\text{CASH}} > \text{Financial Risk}_{\$,\text{CASH}}$

$\text{Financial Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Financial Risk}_{\$,\text{CREDIT}}$

$\text{Financial Risk}_{\$\$\$,\text{EFTPOS}} \approx \text{Financial Risk}_{\$,\text{EFTPOS}}$

$\text{Time Loss Risk}_{\$,\text{CREDIT}} > \text{Time Loss Risk}_{\$,\text{EFTPOS}} > \text{Time Loss Risk}_{\$,\text{CASH}}$

$\text{Time Loss Risk}_{\$\$\$,\text{CREDIT}} > \text{Time Loss Risk}_{\$\$\$,\text{EFTPOS}} > \text{Time Loss Risk}_{\$\$\$,\text{CASH}}$

$\text{Time Loss Risk}_{\$\$\$,\text{CASH}} > \text{Time Loss Risk}_{\$,\text{CASH}}$

$\text{Time Loss Risk}_{\$\$\$,\text{CREDIT}} \approx \text{Time Loss Risk}_{\$,\text{CREDIT}}$

$\text{Time Loss Risk}_{\$\$\$,\text{EFTPOS}} \approx \text{Time Loss Risk}_{\$,\text{EFTPOS}}$

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